Radiochemistry of aqueous ...

from the slope of the curves (Fig. 2 . 3), $G(-Pd^{2+})$ are generally found to increase with decreasing dose rate absorbed, and to be dependent, moreover, on the concentration of the irradiated solution in some way. The reduction of (I) to metallic palladium is incomplete in the presence of palladium black and added metallic palladium (0.0018 g Pd in 5 ml solution) which is probably due to its interaction with the OH radicals and chloride ions present leading to the formation of Pd^{2+} and $PdCl_4^{--}$ ions and to an increased acidity of the solutions. The relation $G(Pd) = G_{H_2O} + (1/2)\,G_{H} - G_{OH}$ (10) is derived. The experimental results of G(Pd) being somewhat lower is explained by the partial sorption of atomic and molecular hydrogen formed by hydrolysis of the palladium black, and by the partial decomposition of H_2O_2 by palladium. In aqueous solutions of (I'), the formation of $PdO \cdot xH_2O$ is probably due to an increase in the pH as a result of radiation. There are 3 figures and 1 table.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Chemical Physics of the Academy of Sciences USSR); Moskovskiy gosudarstvennyy universitet im. M. V. Lomonosova (Moscow State University imeni M. V. Lomonosov)

SUBMITTED: January 29, 1962

Fig. 1. Change of the optical density (at 415 mμ) of a 0.01 M solution of palladous chloride in dependence on the time of radiation (D_o being the optical density of the original solution and D that of the irradiated solution). Dose rates (ev/ml·sec): (1) $8.6 \cdot 10^{16}$; (2) $9 \cdot 10^{17}$; (3) $9 \cdot 10^{16}$. Legend: (A) min.

Fig. 2. Dependence of the amount of precipitated metallic palladium on the time of radiation for a 0.1 M solution of palladous chloride (the volume of the solution being 6 ml). Dose rate (ev/ml·sec): (1) $6.6 \cdot 10^{17}$; (2) $6.6 \cdot 10^{18}$. Legend: (A) 6; (B) min.

Card 3/4

PIKAYEV, A.K.

Radiolysis of Aqueous Nitrate Solutions at High Dose Rates

A. K. Pikayev

The radiolysis of aqueous solutions of sodium nitrate of various concentrations was studied over a wide range of dose rate (from 100 to 10^8 rad/sec). The high dose rates were given by a pulsed electron beam (electron energy 1.0 MeV, pulse duration 5×10^{-8} sec).

In the case of dilute solutions saturated with air, $G(NO_2^-)$ depends noticeably on the dose rate. At high nitrate concentrations, $G(NO_2^-)$ varies only a little when the dose rate increases. This dependence is more pronounced in the case of solutions saturated with argon. The effect of the dose rate on the value of $G(NO_2^-)$ in alkaline $NaNO_3$ solutions was also investigated.

The kinetics of the after-effects obtained with pulsed radiation in 0.8 N aqueous solutions of sulphate ions containing Ce^{4+} and $NaNO_3$ were studied.

Possible mechanisms of the dose-rate dependence of $G(NO_2^-)$ will be discussed, and may include a reaction of the ion NO_3^{2-} with the OH radical.

Laboratory of Radiochemical Investigations, Institute of Physical Chemistry of the Academy of Sciences of the USSR, Moscow

(Session continued on next page)

report presented at the 2nd Intl. Congress of Radiation Research,
Harrogate/Yorkshire, Gt. Brit. 5-11 Aug 1962

VERESHCHINSKIY, Igor' Vyacheslavovich; PIKAYEV, Aleksey Konstantinovich; SPITSYN, Vikt. I., akademik, otv. red.; DRAGUNOV, E.S., red.; YENIFANOVA, L.V., tekhn. red.; YEGOROVA, N.F., tekhn. red.

[Introduction to radiation chemistry] Vvedenie v radiatsionnuiu khimiiu. Moskva, Izd-vo Akad. nauk SSSR, 1963. 406 p. (MIRA 16:5)

(Radiochemistry)

YERSHOV, B.G.; PIKAYEV, A.K.; GLAZUNOV, P.Ya.; SPITSYN, Vikt.I., akademik

Electron paramagnetic resonance spectrum of a hydrated electron in irradiated frozen alkaline solutions. Dokl. AN SSSR 149 no.2:363-366 Mr '63. (MIRA 16:3)

1. Institut fizicheskoy khimii AN SSSR.
(Alkalies--Spectra) (Radiation) (Electrons)

PIKAYEV, A.K.; GLAZUNOV, P.Ya.; SPITSYN, Vikt.I., akademik

Mechanism underlying the radiolytic oxidation of bivalent iron in aqueous sulfuric acid solutions containing oxygen when the absorbed dose is high. Dokl. AN SSSR 150 no.5:1077-1080 Je '63. (MIRA 16:8)

1. Institut fizicheskoy khimii AN SSSR.
(Iron compounds) (Radiation) (Oxidation)

PIKAYEV, A.K.; GLAZUNOV, P.Ya.; SPITSYN, Vikt.I., akademik

Approximate values of the rate constants of radiation reactions when a hydrated electron is involved. Dokl. AN SSSR 151 no.6:1387-1389 Ag '63. (MIRA 16:10)

1. Institut fizicheskoy khimii AN SSSR.

PIKAYEV, A.K.; GLAZUNOV, P.Ya.; YAKUBOVICH, A.A.

Radiolysis of aqueous neutral solutions of nitrates at high dose rates. Kin. i kat. 4 no.6:835-843 N-D '63.
(MIRA 17:1)

1. Institut fizicheskoy khimii AN SSSR.

YERSHOV, B.G.; PIKAYEV, A.K.; GLAZUNOV, P.Ya.; SPITSYN, Vikt. I., akademik

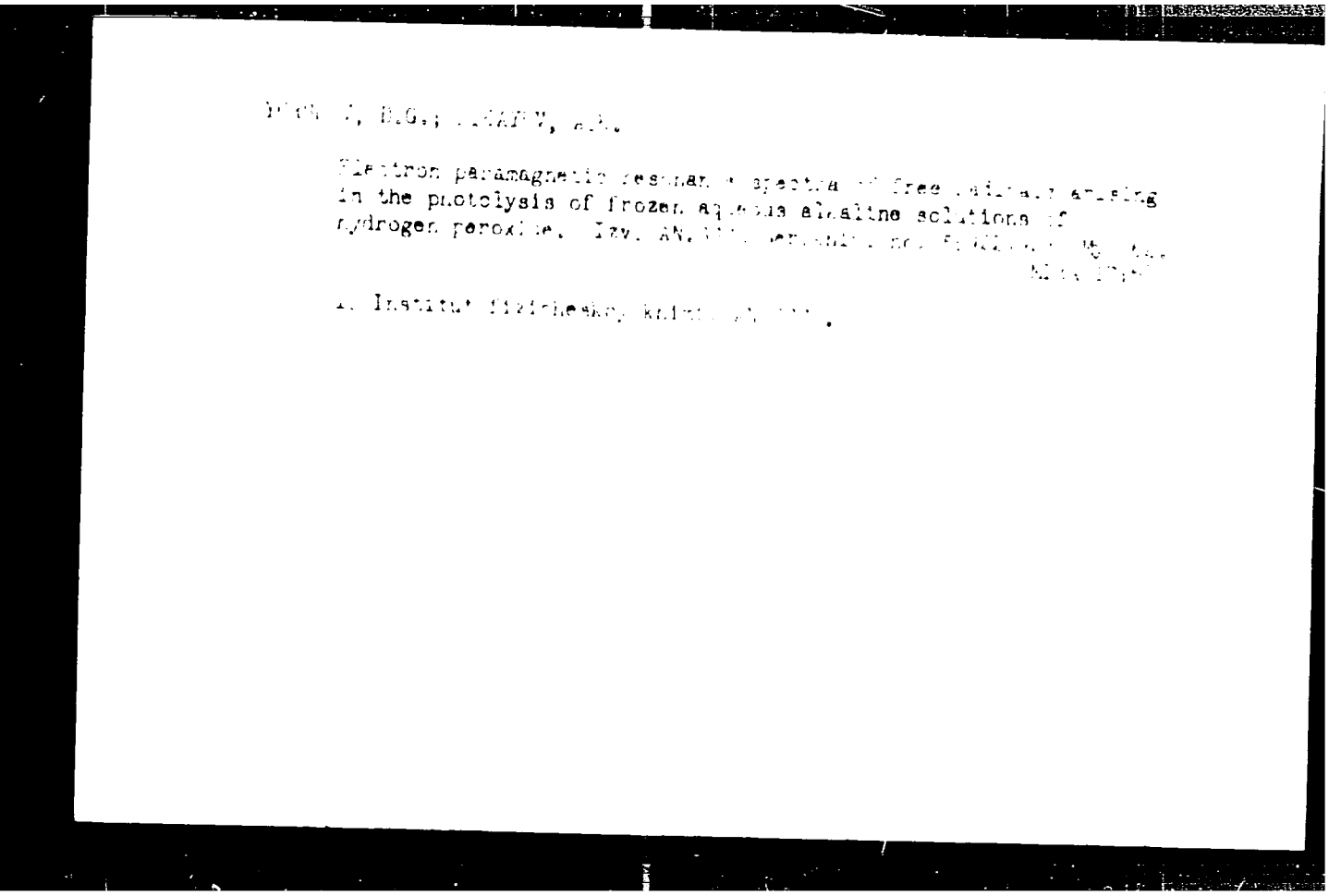
Electron paramagnetic resonance method used for proving the participation of the trapped electron in the radiochemical reactions taking place in frozen aqueous solutions. Dokl. AN SSSR 154 no.4:899-902 F '64. (MIRA 17:3)

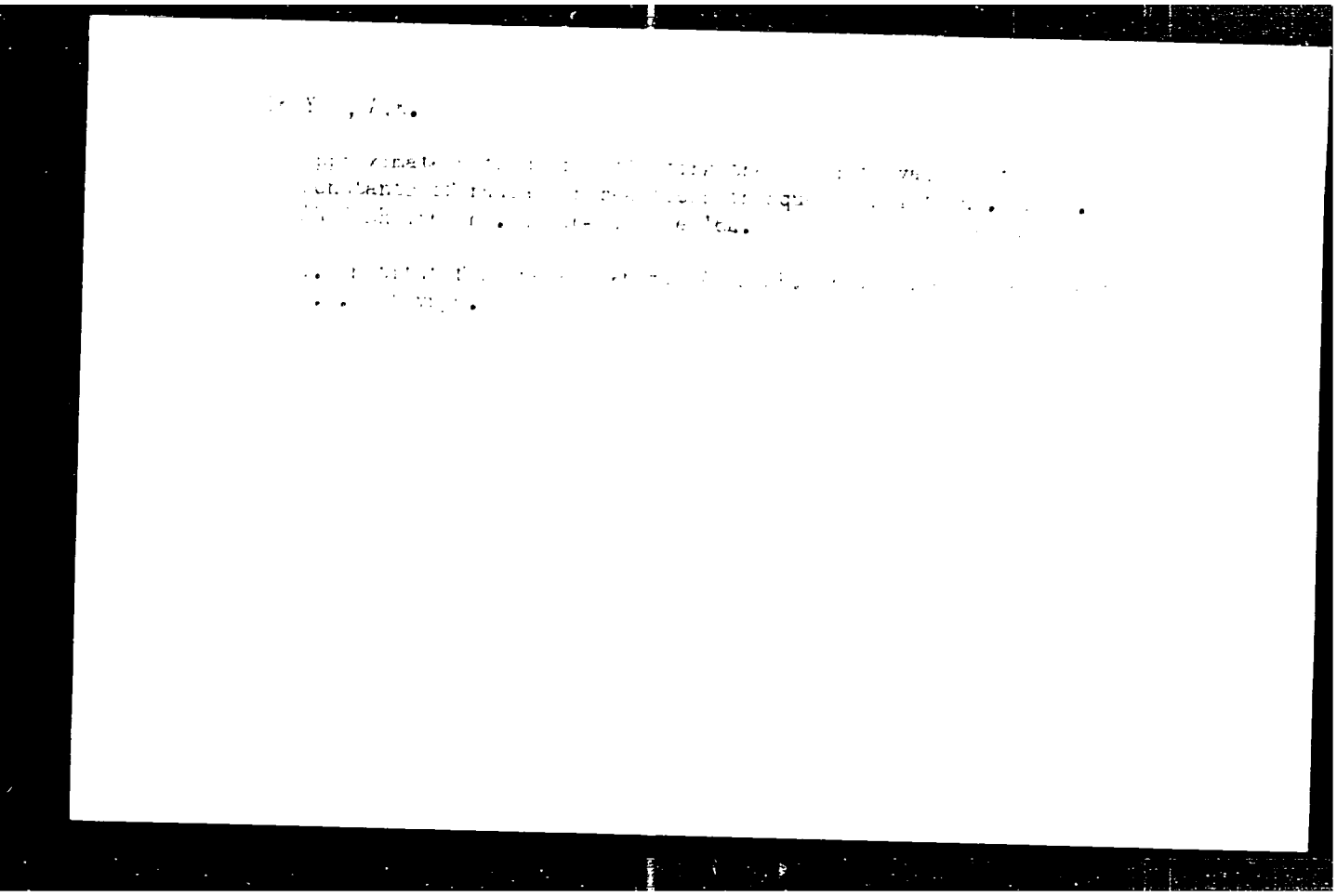
1. Institut fizicheskoy khimii AN SSSR.

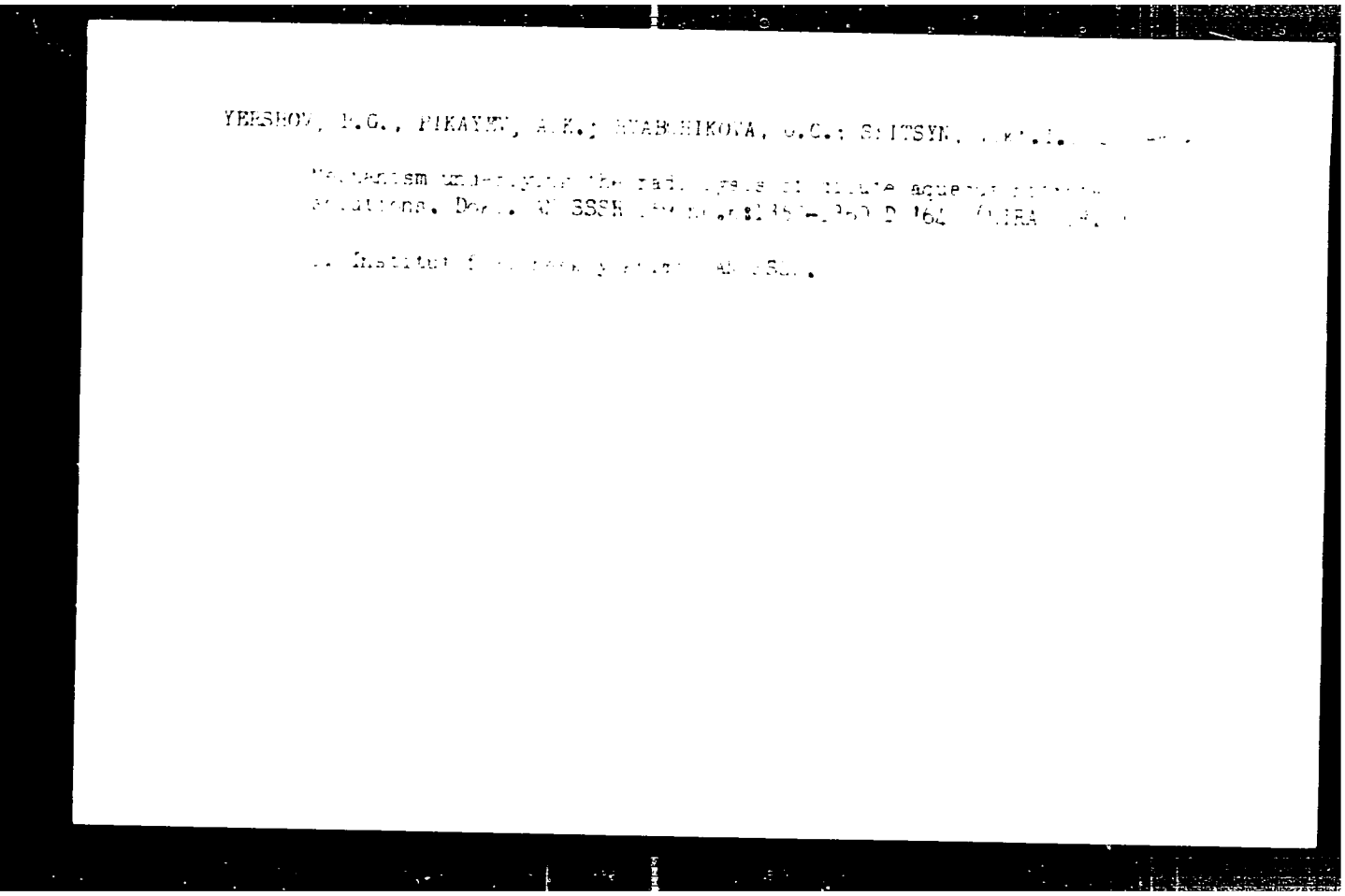
PIKAYEV, A.K.; GLAZUNOV, P.Ya.

Radiolysis of aqueous solutions of ferrosulfate under the effect of decimicrosecond electron pulses. Dokl. AN SSSR 154 no.5: 1167-1170 F'64. (MIRA 17:2)

1. Institut fizicheskoy khimii AN SSSR. Predstavleno akademikom V.I. Spitsynym.







YEGOROV, V.G., PIKAYET, A.K.; NYABIKOVA, G.C.; SAITSYN, [illegible]

[illegible] Dokl. AN SSSR [illegible] 162 [illegible]

[illegible] Institut [illegible] SSSR.

L 52567-65 EWT(m)/EWP(t)/EWP(b)/EWA(h) IJP(c) JD/JG

ACCESSION NR: AP5015795 UR/0062/64/000/011/1944/1951 6 14 B

AUTHOR: Pikayev, A. K.; Glazunov, P. Ya. 21

TITLE: Mechanism of the radiolytic reduction of quadrivalent cerium in aqueous sulfuric acid solutions at high absorbed dose rates

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 11, 1964, 1944-1951

TOPIC TAGS: cerium, sulfuric acid, aqueous solution, radiation chemistry, 19 chemical reduction, reaction mechanism

Abstract: The yields of Ce^{+3} and the sum of the peracids $H_2S_2O_8 + H_2SO_5$ were determined in the radiolysis of sulfuric acid solutions of ceric sulfate at dose rates up to 10^{25} eV/ml·sec. The dependence of $G(Ce^{+3})$ and $G(H_2S_2O_8 + H_2SO_5)$ on the H_2SO_4 and Ce^{+3} concentrations was investigated at a dose rate of 10^{25} eV/ml·sec. The yields were found to decrease with increasing Ce^{+3} concentration. With increasing H_2SO_4 concentration, the yield of peracids increased, while the yield of Ce^{+3} decreased. At a low dose rate ($6.7 \cdot 10^{15}$ eV/ml·sec), peracids are formed exclusively as a result of

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L 52567-65

ACCESSION NR: AP5015795

the direct action of radiation on sulfuric acid. The possible mechanism of the radiolytic transformations of Ce^{+4} and Ce^{+3} ions and the formation of peracids at high absorbed dose rates was considered. The values of the relative rate constants were calculated for a number of the radiochemical reactions that take place in aqueous hydrochloric solutions of Ce^{+4} and Ce^{+3}. Orig. art. has 17 formulas, 8 graphs, and 3 tables.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences, SSSR)

SUBMITTED: 29Jan63 ENCL: 00 SUB CODE: IC, GC

NO REF SOV: 006 OTHER: 011 JPRS

Card 2/2

IMAYE, [illegible] Konstantinovich; SMIRNOV, I.I., [illegible], otv. red.; MAGAYENKO, I.T., red.

Pulse radiolysis of water and aqueous solutions; impul'snyi radioliz vody i vodnykh rastvorov. Moskva, Nauka, 1965. 259 p. (MIRA 18:1)

PIKAYEV, A.K.; SIBIRSKAYA, G.K.; RYABCHIKOVA, G.G.; GLAZUNOV, P.Ya.

Mechanism of hydrogen peroxide formation in a 0,4 M aqueous solution of sulfuric acid at high dose rate of absorption. Kin. i kat. 6 no.1:41-47 Ja-F '65. (MIRA 18:6)

1. Institut fizicheskoy khimii AN SSSR.

L 43981-65 EWG(j)/EWT(m)/EPF(c)/EPF(n)-2/EWP(j)/EWA(h)/EWA(1) Pc-4/Pr-4/Peb/
Pu-4 RPL GG/RM

ACCESSION NR: AP5009656 UR/0062/65/000/003/0401/0408

AUTHOR: Pikayev, A. K.; Glazunov, P. Ya.; Spitsyn, Vikt. I.

TITLE: Approximate values of the rate constants of radiation-induced reactions of hydrogen atoms and hydroxyl radicals in aqueous solutions

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 3, 1965, 401-408

TOPIC TAGS: radiochemical reaction, rate constant, atomic hydrogen, hydroxyl radical, electron bombardment, ferrous ion oxidation, radiolytic oxidation

ABSTRACT: The article describes a new method of evaluating the absolute rate constants of radiation-induced reactions involving H and OH radicals, based on the use of two independent methods of kinetic treatment of experimental data obtained by studying the radiolysis of aqueous sulfuric acid solutions of ferrous sulfate containing oxygen and subjected to pulses of electron radiation. The mechanism of radiolytic oxidation of Fe^{2+} ions at high rates of the absorbed dose was examined. The decrease in the yield of Fe^{3+} is attributed to the competition of the reactions $H + OH$, $Fe^{2+} + OH$ and $H + O_2$. Absolute values of the reaction rate constants were determined: $k_{Fe^{2+}+OH} = 2.7 \times 10^8$; $k_{H+O_2} = 5.3 \times 10^9$

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L 48981-65
ACCESSION NR: AP5009656

and $k_{H+OH} = 4.5 \times 10^{10}$ /mole·sec. On the basis of literature data on the relative constants and absolute values obtained, the rate constants of a series of radiation-induced reactions of H and OH radicals were estimated. Orig. art. has: 3 figures, 5 tables, and 19 formulas.

ASSOCIATION: Institut fizicheskoy khimii Akademii nauk SSSR (Institute of Physical Chemistry, Academy of Sciences, SSSR)

SUBMITTED: 10Apr63 ENCL: 00 SUB CODE: GC, NP

NO REF SOV: 012 OTHER: 024

Card 2/2

L 24303-66 EWT(1)/EWT(m)/EPF(n)-2 IJP(c) WW/GG/AT

ACC NR: AP6009806 SOURCE CODE: UR/0062/66/000/002/0386/0386

AUTHOR: Yershov, B. G.; Pikayev, A. K. 59

ORG: Institute of Physical Chemistry, Academy of Sciences, SSSR (Institut fizicheskoy khimii Akademii nauk SSSR) B 19

TITLE: Detection by the EPR method of captured electrons in irradiated vitreous neutral aqueous solutions of electrolytes

SOURCE: AN SSSR. Izvestiya. Seriya khimicheskaya, no. 2, 1966, 386

TOPIC TAGS: electron paramagnetic resonance, electron, electron capture, electron detection, electrolyte

ABSTRACT: The EPR method was utilized in detecting captured electrons in irradiated frozen neutral H_2O and D_2O solutions of LiCl and $NaClO_4$. Gamma-irradiation of 10-15M LiCl and of 10M $NaClO_4$ solutions at -196° caused blue and violet coloration, respectively. Photo-annealing in visible light completely decolorized the $NaClO_4$ solution and the LiCl solution turned light green. The decoloration was accompanied by the disappearance of the singlet where the g-factor is about 2.00. The electron escape was signigicantly less than from vitreous alkali solutions. The electron concentration rapidly becomes stationary with

Card 1/2 UDC: 543.422+538.113

L 24303-66

ACC NR: AP6009806

increased dosage. Electrons are stabilized only in vitreous solutions.
Orig. art. has: none.

SUB CODE: 07, 20/ SUBM DATE: 01Dec65/ ORIG REF: 002

Card 2/2

ACC NR: AT7001782 SOURCE CODE: UR/3119/66/000/004/0039/0047

AUTHOR: Yershov, B. G.; Pikayev, A. K.

ORG: Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Detection of a captured electron in irradiated frozen aqueous solutions of alkalis by the electron paramagnetic resonance method

SOURCE: AN LatSSR. Institut fiziki. Radiatsionnaya fizika, no. 4, 1966. Ionnyye kristally (Ionic crystals), 39-47

TOPIC TAGS: electron capture, electron paramagnetic resonance, aqueous solution, hydration, epr spectrum, line splitting

ABSTRACT: This is a continuation of earlier work (Izv. AN SSSR ser. khim. v. 10, 1755, 1964 and preceding papers) where the hydrated electron produced by the effect of ionizing radiation on water was detected with the aid of EPR. The present study was made on frozen solutions, for which the probability of the hydrated electron is the largest. The EPR solutions of $NaNO_3$ irradiated at 77K, and of concentrated solutions of KOH, irradiated at 77K, are analyzed and the radicals responsible for the different fine structure lines are identified. The measured line widths and the corresponding g-factors, as well as data obtained by others, lead to the conclusion that in the radiolysis of water and aqueous solutions, the primary radiolysis product, which has reducing properties, is the hydrated electron, which becomes stabilized in alkaline solutions at low temperatures. The character of its EPR spectrum indicates

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ACC NR: AT7001782

that the nearest neighboring of the electron are water molecules and not cations. The nature of the observed paramagnetic center is discussed in light of these results and published data. Orig. art. has: 6 figures, 7 formulas, and 1 table.

SUB CODE: 20/ SUBM DATE: 00/ ORIG REF: 006/ OTH REF: 019

Card 2/2

ACC NR: AP7004584 SOURCE CODE: UR/0020/66/169/005/1119/1122

AUTHOR: Yershov, B. G.; Pikayev, A. K.

ORG: Institute of Physical Chemistry, AN SSSR (Institut fizicheskoy khimii AN SSSR)

TITLE: Yields of reduction products of the radiolysis of water in neutral and alkaline media

SOURCE: AN SSSR. Doklady, v. 169, no. 5, 1966, 1119-1122

TOPIC TAGS: chemical reduction, hydrogen peroxide

ABSTRACT: Radiolytic conversions in a nitrate system at high dose rates (1 megaelectron volt electron radiation, doses of $(3-6)\cdot10^{17}$ electron volts per milliliter) were investigated in a study of the yields of reduction products of the radiolysis of water at various pH. At pH 13, in contrast to neutral and weakly alkaline media, $G(NO_2^-)$ was found to be independent of the dose rate. The yield of nitrate at high dose rates could serve as a measure of the yield of hydrated electrons. Some obscurity still remains concerning the yield of hydrogen peroxide: in neutral solutions, $G(H_2O_2)$ increases at high dose rates, but still comprises only 1.35; in strongly alkaline medium, $G(H_2O_2)$ is practically the same at high dose rates as at low dose rates (equal to ~ 0.4 at pH 13.2). The observed increase in the yield of hydrated electrons in alkaline medium may be due to several factors: 1) interaction of hydrogen atoms (possible primary products of radiolysis) with OH^- ions in

UDC: 484-15

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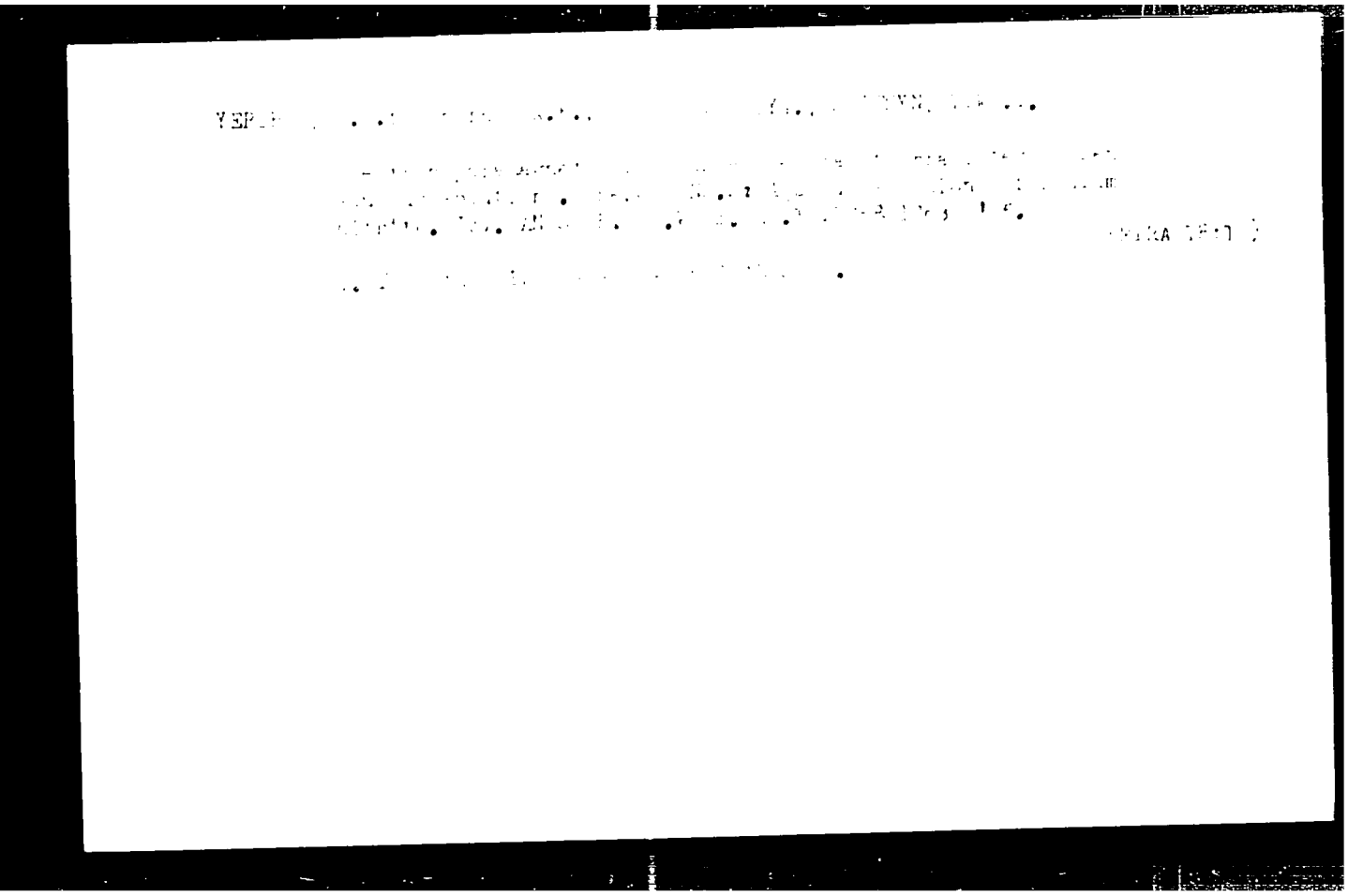
ACC NR: AP7004584

solution, yielding hydrated electrons; 2) additional formation of e^-_{aq} in the reaction of hydroxyl ions with excited water molecules or radical pairs in the cell; 3) possible generation of hydrated electrons and hydroxyl radicals on account of excitation and subsequent decomposition of hydroxyl ions; 4) partial suppression of the reaction of hydrated electrons and hydroxyl radicals as a result of the OH radical acceptor function of OH^- ions, leading to an increase in $G_{e^-_{aq}}$ and G_{OH}. This paper was presented by Academician V. I. Spitsyn on 23 November 1965. Orig. art. has: 1 figure, 18 formulas, and 1 table. [JPRS: 38,970]

SUB CODE: 07 / SUBM DATE: 03Nov65 / ORIG REF: 006 / OTH REF: 009

Card 2/2



YERSHOV, B.G.; PIKAYEV, A.K.; GLAZUNOV, P.Ya.; SPITSYN, Vikt.I.

Electron paramagnetic resonance spectra of irradiated frozen aqueous solutions. Izv. AN SSSR. Ser. khim. no.10:1755-1761 O '64. (MIRA 17:12)

1. Institut fizicheskoy khimii AN SSSR.

PIKAYEV, A.K., GLAZUNOV, P.Ya.; SPITSYN, V[illegible]kt I.

Approximate values of rate constants for radiation reactions of hydrogen atoms and hydroxyl radicals in aqueous solutions. Izv. AN SSSR. Ser. khim. no.3:401-408 '65. (MIRA 18:5)

1. Institut fizicheskoy khimii AN SSSR.

KARTASHEVA, L.I.; PIKAYEV, A.K.

Causes responsible for the increased yield of phenol in the radiolysis of aqueous sulfate solutions of benzene containing bivalent iron ions and oxygen. Dokl. AN SSSR 163 no.[illegible] Ag '65. (MIRA 18:8)

1. Institut fizicheskoy khimii AN SSSR. Submitted January 20, 1965.

SPITSYN, V.I., akademik; P[illegible]YVA, V.I., i KHAZLETKO, I.Ye.

Catalytic properties of [illegible] sulfides in the dehydration of n-decyl alcohol. Dokl. AN SSSR 149 no.1:[illegible] (MIRA 17:
D '63

1. Institut fizicheskoy khimii AN SSSR.

PIKAYEVA, V.L.; EMANUEL', N.M. (Moskva)

Kinetics and mechanism of oxidation of diphenylethane in the liquid phase. Zhur. fiz. khim. 35 no. 4:812-820 Ap '61. (MIRA 14:5)

1. Akademiya nauk SSSR, Institut khimicheskoy fiziki.
(Bibenzyl)

AUTHORS: Knorre, D. G., Pikayeva, V. L., 30V/20-120-1-23/[illegible]
Emanuel', N. M.

TITLE: On the Role Played by the Unsteadiness of the Process in the Stimulation of the Degenerated Branched-Chain Reactions in the Liquid Phase (O roli nestatsionarnosti protsessa pri stimulirovanii vyrozhdenno-razvetvlennykh tsepnykh reaktsiy v zhidkoy faze)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 120, Nr 1, pp. 107 - 110 (USSR)

ABSTRACT: In the present paper the kinetics of a chain reaction with degenerated dislocations and quadratic disconnection of the chains are calculated, taking into account the unsteadiness of the process in the initial period of development of the process. The problem of the influence of the duration of initiation on the initial stage of the reaction, mainly on the duration of the induction period, is of basic importance. Therefore the calculation is carried out without taking into account the consumption of the intermediate product which begins to exert influence on the kinetics of the process only in the deeper phases

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of the transformation. It is further shown that the breaking is realized by the recombination of the radicals $RO_2^{\cdot}$, which as a rule takes place at oxygen pressures close to atmospheric pressure. On these conditions the system of equations describing the kinetics of the filling of the intermediate product has the form

$$\frac{d[RO_2]}{dt} = w_o + k_p[ROOH] - k_{recomb}[RO_2^{\cdot}]^2, \quad \frac{d[P]}{dt} = k[RO_2^{\cdot}][RH].$$

k_{recomb} or k, respectively, denote the constants of the recombination velocity of the radicals $RO_2^{\cdot}$ and of the propagation reaction of the chain: $RO_2^{\cdot} + RH \longrightarrow ROOH + R^{\cdot}$. These differential equations are transformed by the introduction of dimensionless variables, and then are integrated. The discussed calculation was carried out for a model ramification of a paraffin, the isodecane. A diagram shows the kinetic curves of the accumulation of hydrogen peroxide calculated for the cases $k_{recomb}/k = 10^3$ and 10^5, as well as the curves calculated by

On the Role Played by the Unsteadiness of the Process in the Stimulation of the Degenerated Branched-Chain Reactions in the Liquid Phase SOV/20-120-1-23/63

using the condition of the quasisteadiness. In either case qualitatively similar results are obtained. The calculation carried out on the condition of the quasisteadiness of the process supplies a completely wrong impression on the intensity of the action of the initiator on the kinetics of the oxidation. The rigorous solution of the system of differential equations for the kinetics of the accumulation of the intermediate product in the reactions of the oxidation of the chains with quadratic breaking makes possible the explanation of the experimentally observed induction periods and promotes the understanding of the effects of the initial stimulation of these processes. There are 3 figures and 11 references, 9 of which are Soviet.

PRESENTED: December 25, 1957, by V.N.Kondrat'yev, Member, Academy of Sciences, USSR

SUBMITTED: December 22, 1957

Card 3/4

On the Role Played by the U-steadiness of the SOV/20-120-1-28/
Process in the Stimulation of the Degenerated Branched-Chain Reactions in the
Liquid Phase

1. Chain reactions--Mathematical analysis 2. Differential equations
3. Transformations

Card 4/4

EMANUEL', N.M.; BLYUMBERG, E.A.; ZIV, D.M.; PIKAYEVA, V.L.

Initiation of isodecane (2,7-dimethyloctane) oxidation by radon radiation. Dokl. AN SSSR 119 no.6:1183-1186 Ap '58. (MIRA 11:6)

1. Institut khimicheskoy fiziki AN SSSR i Radiyevyy institut AN SSSR. Predstavleno akademikom V.N. Kondrat'yevym.
(Octane) (Radon) (Oxidation)

KNORRE, D.G.; PIKAYEVA, V.L.; EMANUEL, N.M.

Effect of the instability of the process in stimulation of degenerated branched-chain reactions in the liquid phase. Dokl. AN SSSR 120 no. 1:107-110 My-Je '58. (MIRA 11:7)

1. Predstavleno akademikom V.N.Kondrat'yevym.
(Chemical reaction, Rate of)

PIKAYEVA, V. L.

1407. Polarographic determination of ethyl nitrate and ethyl nitrite in aqueous solutions. [illegible] berg and V. L. Pikaeva [illegible] Sci., Moscow). Zh. Anal. Khim., [illegible], 10 (6), 310-314.—In 0·1 N LiCl the $E_{\frac{1}{2}}$ of the waves of ethyl nitrate and ethyl nitrite are −0·70 and −0·96 V vs. the S.C.E. The potentials do not vary with pH, but are greatly affected by the presence of ethanol or ether. A polarographic method of determining solubilities of substances is suggested and applied to the determination of the solubility of ethyl nitrate. The diffusion current is plotted against the concn. The curve is first a sloping straight line corresponding to linear relationship between current and concn., which flattens off into a horizontal line corresponding to saturation of the solution. A straight line through the initial part of the curve cuts the horizontal portion produced backwards at a point corresponding to the solubility of the material. The solubility of ethyl nitrate in water at 20° C is thus found to be ≈1·3 g per 100 g.

G. S. SMITH

PIKAYEVA, V.L.

CH

Polarographic determination of ethyl nitrate and nitrite in aqueous solutions. B. A. Blyumberg and V. L. Pikaeva (Inst. Chem. Phys., Moscow). *Zav. Anal. Khim.* 10, 310-14(1955).—The reduction of $EtNO_3$ and $EtNO_2$ on a dropping Hg electrode was studied in LiOH, LiCl, and HCl. Dissolved O was removed separately from the electrolyte and the analyzed soln. The 2 were kept separate under H and combined just before analysis. The half-wave potential of $EtNO_3$ was −0.96 and of $EtNO_2$ −0.70 v. The $E_{1/2}$ were insignificantly affected by the pH but in acid medium the reduction potential of H^+ in the presence of $EtNO_3$ or $EtNO_2$ shifted toward smaller neg. values and the polarograms of the Et compds. merged with that of H^+. When present together $EtNO_3$ and $EtNO_2$ gave one polarogram; they could be sepd. but unsatisfactorily. EtOH when present caused a shift in $E_{1/2}$ in the presence of Et_2O the shift was more pronounced. Ligroine had no effect. $EtNO_3$ did not affect the potential of MeCHO (cf. Gray and Style, *C.A.* 47, 7327e), nor did $EtNO_2$; however, in its presence the reduction potential of Li^+ shifted and the polarograms of Li and MeCHO merged. Procedure for the polarographic detn. of $EtNO_3$ and $EtNO_2$ are given.

M. Hoch

(1)

20-119-6-37/56

AUTHORS: Emanuel', N. M., Blyumberg, E. A., Ziv, D. M., Pikayeva, V.L.

TITLE: The Initiating Effect of the Radiation of Radon in the Process of the Oxydation of Isodecane (2,7-Dimethyloctane)(Initsiiruyushcheye deystviye izlucheniya radona v protsesse okisleniya izodekana (2,7-dimetiloktana)

PERIODICAL: Doklady Akademii nauk SSSR, 1958, Vol. 119, Nr 6, pp. 1183 - 1186 (USSR)

ABSTRACT: The application of the radiations of radioactive gases for the initiation of chain reactions can be very effective and this not only in slow chain reactions in the liquid phase. Besides, the application of radioactive gases allows interesting experiments with chain reactions in the gaseous phase. This work uses as test object the oxidation of isodecane (2,7-dimethyloctane) on the action of α-particles of radon. The authors started from the fact that the processes of the oxidation of the hydrocarbons in the liquid phase represent degenerate-branched chain reactions. Therefore such processes can be stimulated only in the initial period in the development of the process. The

action of radon radiation leads to the occurring of active particles (free radicals and atoms), i. e. to the increase of the initial velocity of the production of the chains w_o. The experiments were made in a glass device with oxidation cell. The device and the performance of the experiments are illustrated by a figure. 2 diagrams illustrate the curves for the accumulation of the peroxides and acids in the oxidation of isodecane, initiated by α-radiation of radon (and also by the α-and β-radiation of the decay products of Rn). The short stimulating action of the radon radiation is enough for a considerable decrease of the induction period in the production of the hydro-peroxides. Also the maximum yield of the peroxide compounds is increased. The very strong increase of the production velocity of the active centers must lead to a considerable diminution of the induction period, which also experimentally is observed. Still more effective is the action of the α-radiation of Rn upon the reaction velocity after the end of the induction period. The authors thank V. M. Vdovenko for his inter-

5(3) SOV/75-14-2-7/27

AUTHOR: Pikayeva, V. L.

TITLE: A Chromatographic Method of Separating Aromatic Carbonyl Compounds (Khromatograficheskiy metod razdeleniya aromaticheskikh karbonil'nykh soyedineniy)

PERIODICAL: Zhurnal analiticheskoy khimii, 1959, Vol 14, Nr 2, pp 184-187 (USSR)

ABSTRACT: The author of the present paper elaborated a method of separating chromatographically a complex mixture of aromatic carbonyl compounds which form in the oxidation of dibenzyl (benzil, desoxybenzoin, benzoin, benzaldehyde, phenylacetaldehyde). The most frequently employed method is that of separating carbonyl compounds in the form of their 2,4-dinitrophenylhydrazones. In order to obtain good results in the separation of these compounds on normal chromatographic paper the paper must have hydrophobic character. This is obtained by esterifying the hydroxyl groups of cellulose with acid chlorides (Refs 6, 7). In employing the distribution chromatography for separating carbonyl compounds it is suitable to use the distribution between two organic solvents (Refs 15-21). With the majority

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A Chromatographic Method of Separating Aromatic Carbonyl Compounds

of the solvents recommended in publications only wide bands could be obtained by means of which the separation of the hydrazones could not be carried out. A sharp separation of the 2,4-dinitrophenylhydrazones of aromatic carbonyl compounds was attained only by a combination of adsorption- and distribution chromatography. Among the numerous systems investigated the following system proved to be the most suitable: acetylated paper saturated with n-octyl alcohol (stationary phase) is used as an adsorbent; the mobile phase is a mixture of hexane, toluene, and glacial acetic acid at a proportion by volume of 6 : 1 : 3. The adsorption properties of acetyl cellulose greatly influence the results. In order to attain equal acetylation the author used a thin teflon spiral to which the chromatographic paper was coiled. This method prevents a sticking together of the paper sheets so that after the acetylation the paper shows a uniform surface. If small quantities of sulfuric acid are contained in the acetylating mixture which are used as catalysts for esterification, the paper cannot be used any longer. For this reason sulfuric acid must be carefully kept out. The devised method of separat-

A Chromatographic Method of Separating Aromatic Carbonyl Compounds

ing and determining quantitatively the aforementioned aromatic carbonyl compounds is described in detail in this paper. The R_f values of the five carbonyl compounds mentioned as well as of pure 2,4-dinitrophenylhydrazine and the colors of the stains after spraying the paper with alcoholic alkali lye are given in a table. In another table the results of the quantitative separation of an artificial mixture of benzil, benzoin, benzaldehyde, and desoxybenzoin according to the method described are given. The quantitative determination was made after the removal of the stains with alcoholic alkali lye by measuring the solutions in a photoelectric colorimeter FEK-M. The author thanks N. M. Emanuel' and E. A. Blyumberg for valuable advice. There are 1 figure, 2 tables, and 22 references, 1 of which is Soviet.

ASSOCIATION: Institut khimicheskoy fiziki AN SSSR, Moskva
(Institute of Physical Chemistry of the AS USSR, Moscow)

PIKAYEVA, V.L.

7. The kinetics and chemistry of the reaction of ether with nitrogen dioxide in the gas phase. E. A. Blyumberg, V. L. Pikaeva, and N. M. Emanuel. *Zhur. Fiz. Khim.* 29, 1509–31(1955).—Et nitrate, Et nitrite, AcOH, AcH, NO, CO, and CO_2 were identified among the reaction products. This was accomplished after methods were developed for the detn. of the beginning and final reaction products in the complex mixt. by use of spectrographic, polarographic, and chem. analysis. The kinetic curves of the NO_2 consumption are well described by bimol. reaction equations, and reaction-velocity consts. were detd. for different temps. The activation energy was 23 kcal./mol. The kinetics of consumption of the beginning products and of the formation of the final products were detd. from data supplied by photoelec., polarographic, and chem. analyses at temps. of 120, 150, 180, and 200°. The effects of different addns. on the reaction products were investigated. An inhibiting action of the addn. of NO and the absence of any effects from the addn. of Et nitrate and Et nitrite were proved. The addn. of NO to an already reacting mixt. 1 min. after the start of the reaction does not affect the course of the reaction. A relation was found between the quant. yields of the products and the conditions on the surface of the reacting vessel. The formation of ether complexes with NO_2 was proved by pressure drops at 2, 20, and 100°. W. M. Sternberg

PIKAYEVA V L

PIKAEVA, V. L.

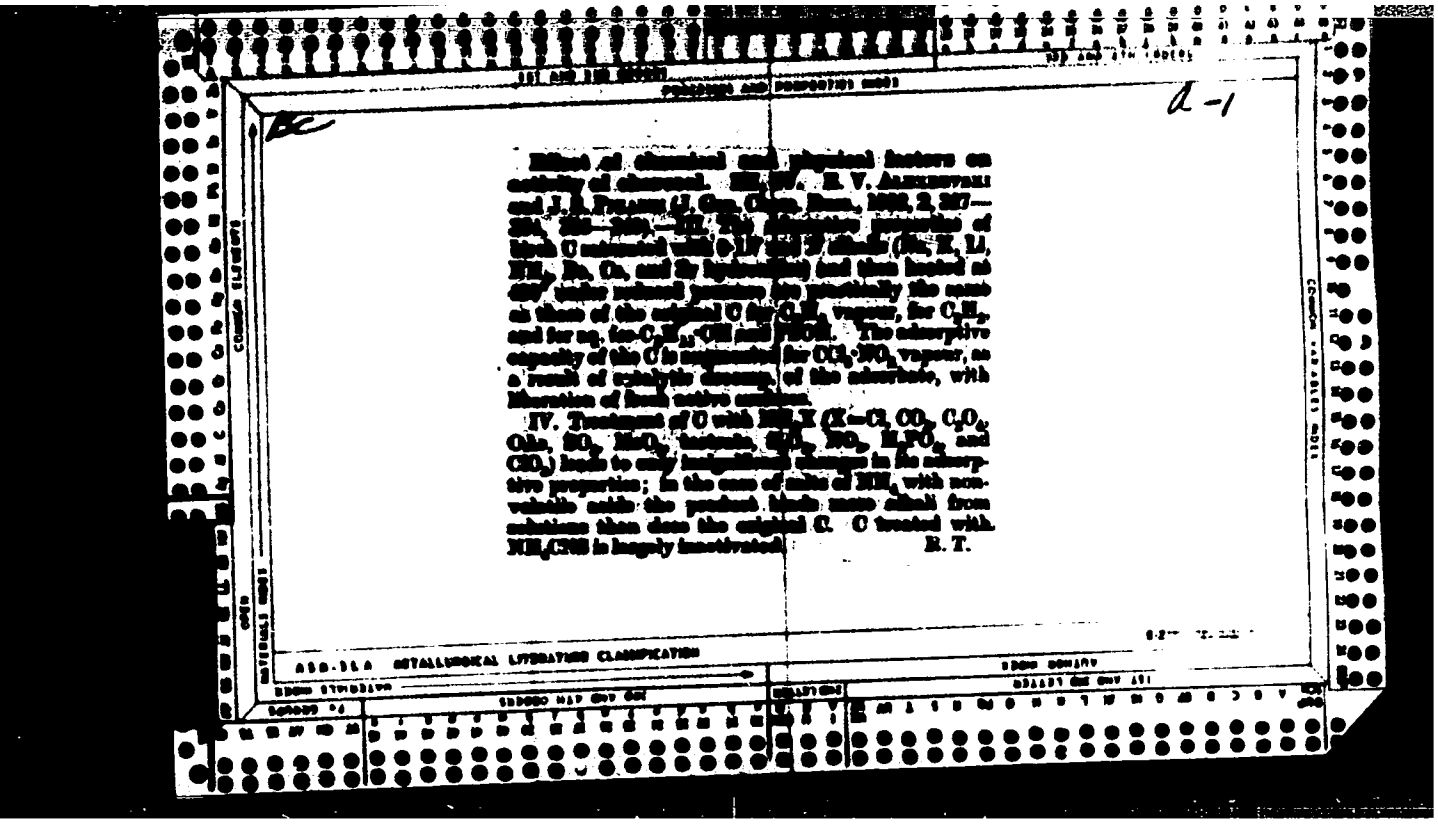
From the Russian for Mrs. Esther E. Norton

Zhurnal Fizicheskoi Khimii 29, 9:
1569-81, September 1955

Kinetics and chemistry of the reaction of ether with nitrogen dioxide in the gas phase

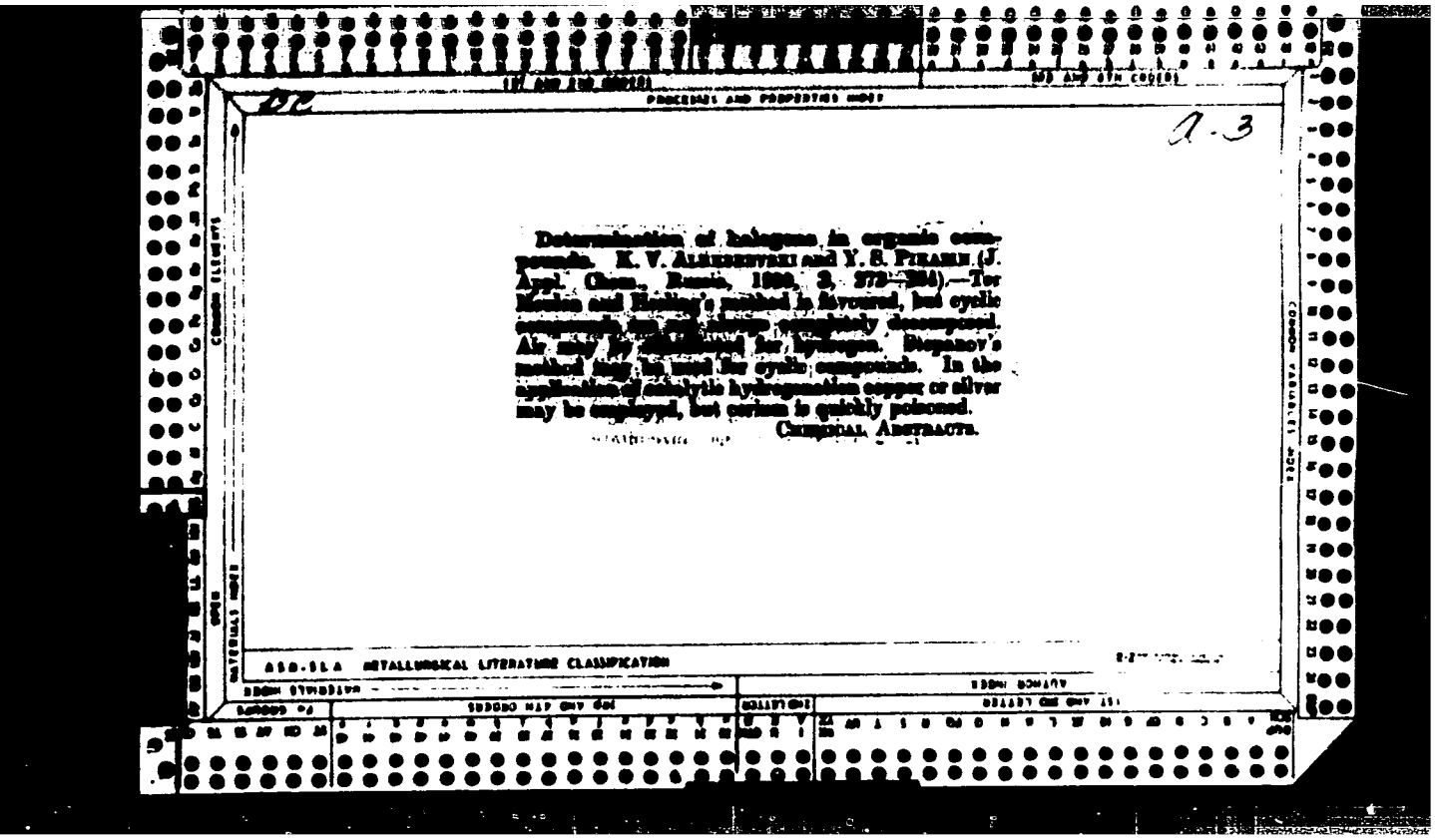
by
E. A. Blümberg; V. L. Pikaeva and N. M. Emanuel'

Translated at the National Institutes of Health, Bethesda, Maryland
Full translation available in [redacted]/M



IV. Treatment of C with NH_3, X (X=Cl, CO_3, C_2O_4, ClO_4, SO_4, MnO_4, acetate, CrO_4, NO_3, H_2PO_4, and CO_3) leads to only insignificant changes in the adsorptive properties; in the case of salts of NH_4 with nonvolatile acids the product adsorbs more alkali from solutions than does the original C. C treated with NH_4Cl is largely inactivated.

B. T.

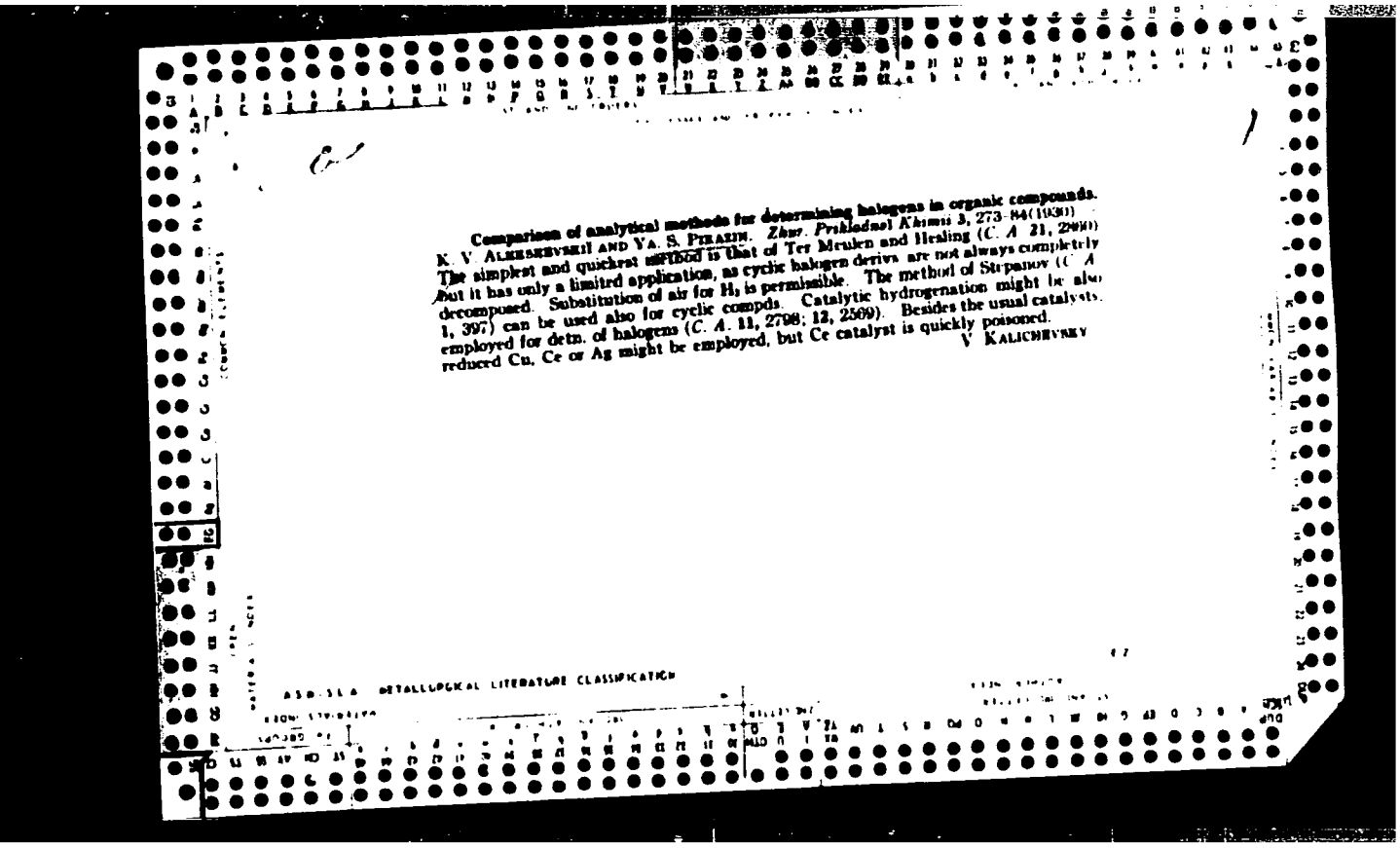


1.3

Determination of halogens in organic compounds. K. V. ALEKSEEVSKII and Y. S. PYKHIN (J. Appl. Chem., Russia, 1936, 9, 372—384).—The Messinger and Harding's method is favoured, but cyclic compounds are not always completely decomposed. Air may be substituted for hydrogen. Stepanov's method may be used for cyclic compounds. In the application of catalytic hydrogenation copper or silver may be employed, but carbon is quickly poisoned.

CHEMICAL ABSTRACTS.

ASSIA METALLURGICAL LITERATURE CLASSIFICATION



Comparison of analytical methods for determining halogens in organic compounds. K. V. ALEKSEEVSKII AND YA. S. PEKARIN. *Zhur. Prikladnoi Khimii* 3, 273–84(1930). The simplest and quickest method is that of Ter Meulen and Heuling (*C. A.* 21, 2990). But it has only a limited application, as cyclic halogen derivs. are not always completely decomposed. Substitution of air for H_2 is permissible. The method of Stepanov (*C. A.* 1, 397) can be used also for cyclic compds. Catalytic hydrogenation might be also employed for detn. of halogens (*C. A.* 11, 2798; 12, 2569). Besides the usual catalysts, reduced Cu, Ce or Ag might be employed, but Ce catalyst is quickly poisoned.
V. KALICHEVSKY

A38-51A METALLURGICAL LITERATURE CLASSIFICATION

RYBAKOV, Ye.T.; PIKAZIN, Ya.S.

Improved method of hydrogen production for aerological purposes. Trudy GGO no.108:73-85 '60. (MIRA 13:11)
(Hydrogen) (Balloon gases)

AUTHORS: Pikazin, Ya. S., Rybakov, Ye. T. S/050/60/000/04/014/018
B007/B017

TITLE: Aluminum Silicol Method for Producing Hydrogen

PERIODICAL: Meteorologiya i gidrologiya, 1960, Nr 4, pp 47-48 (USSR)

TEXT: At present, rapid methods are employed by the Gidrometeosluzhba (Hydrometeorological Service), Sevmorput' (Northern Sea Route) etc to produce hydrogen: 1) interaction of ferrosilicon (silicol), caustic soda, and water according to $Si + 2NaOH + H_2O \longrightarrow Na_2SiO_3 + 2H_2$. 2) Interaction between aluminum and water in the presence of catalytic amounts of alkali. The main disadvantage of the first method is the necessity to heat the water itself at temperatures above zero (at 15°). Therefore, new methods for oxygen production were developed. These are based mainly on the interaction between aluminum and its alloys with water. Also these methods show the shortcomings mentioned here. In view of these shortcomings and of the fact that ferrosilicon is still the most inexpensive product for hydrogen production, and that it will always be less expensive than aluminum, the new "aluminum silicol" method was developed by the Glavnaya geofizicheskaya observatoriya (Main Geophysical Observatory). In this method hydrogen is produced by the interaction between ferrosilicon and aluminum mixtures, water, and alkali. The mixture consists of ferrosilicon and 5-15% of

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Aluminum Silicol Method for Producing Hydrogen

S/050/60/000/04/014/018
B007/B017

the most inexpensive secondary aluminum powder of the type APV. The aluminum enters into reaction with alkali and water and produces high temperatures which, in turn, initiate the reaction between ferrosilicon, alkali, and water (without preheating of the water). Some examples for the application of this method are given.

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DOLGIN, I.M.; PIKAZIN, Ya.S.; SOKOLOV, S.I.

Improving the method of hydrogen production at aerological stations. Meteor. i gidrol. no.3:46-47 Mr '59. (MIRA 12:5)
(Hydrogen) (Gas producers)

3 (7), 5 (3)

AUTHORS: Dolgin, I. M., Pikazin, Ya. S., Sokolov, S. I. SOV/50-59-3-13/24

TITLE: On the Improvement of Hydrogen Production Methods at Aerological Stations (Ob usovershenstvovanii metoda dobyvaniya vodoroda na aerologicheskikh stantsiyakh)

PERIODICAL: Meteorologiya i gidrologiya, 1959, Nr 3, pp 46 - 47 (USSR)

ABSTRACT: A survey of the methods of hydrogen production is given here. Transporting of hydrogen from factories meets with great difficulties because of the restricting rules in force for all transportation types. Hydrogen is therefore produced in aerological stations. At present, the silicol method is employed, which essentially consists of the separation of hydrogen under the interaction of ferrosilicon, caustic soda and water. Generators of two types are used for the production: AVG-40 and G-3 (ANII). The former allows an internal pressure of up to 100 atmospheres, it requires relatively little water, is however apt to cause troubles as concerns prevention of accidents. The latter is more convenient in this regard, but it requires much water. The silicon method, however, is also in-

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On the Improvement of Hydrogen Production Methods at [illegible]
Aerological Stations

[illegible] convenient in [illegible]. It [illegible] the use of [illegible] is not always possible, [illegible] of the hardening of silicate, and a great quantity of caustic soda is needed. This all led to the necessity of working out methods of producing hydrogen. A new method (Patent No 111162) has been recently devised under the supervision of Ya. S. Pilka. Hydrogen is produced by interaction of aluminum and [illegible] the presence of a lye acting as catalyst. The method is [illegible] cal and cheap. 1 m³ of hydrogen requires 1 kg of aluminum powder and 130 g caustic soda, as well as a small quantity of water, including sea and hard water may be used with a pre-heating. Hydrogen is purer than the one produced according to the silicol method and by its properties comes close to the hydrogen obtained by hydrolysis. The new method, however, requires higher quality steel cylinders. The possibility is pointed out of employing steel cylinders in combination with corresponding valves for the production of steel cylinder gas generators. By the aid of them it would be possible to obtain as much hydrogen from one charge, as is required for filling the radiosonde casings. The generator G-3 could also be used for the production of hydrogen by the new method. The costs

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of chemicals and transportation charges are considerably lower with the new method. For this reason it has already been applied in a number of stations in the arctic circle, such as in "Severnyy polyus-6" (North Pole-6) and "Severnyy polyus-7" ("North Pole-7").

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C1

2

Influence of some chemical and physical factors on the activity of charcoal. III.
Influence of alkali impregnation. F. V. Alekseevskii and Ya. S. Pirabin. *J. Gen.*
Chem. (U.S.S.R.) 8, 327-34(1942), cf. *C. A.* 36, 4981. Samples of powd. C were kept
in contact with 1.0 and 0.1 *N* solns. of NaOH, KOH, LiOH, NH_4OH, and also with
satd. solns. of $Ca(OH)_2$, $Sr(OH)_2$ and $Ba(OH)_2$, for a period of 7 days at room temp.
The samples were then filtered, without washing, dried at 100° and degassed in a glass
tube at 450° by means of a vacuum pump. A sample treated with NH_4OH suffered a
reduction in its ash content, while in the other samples the ash increased in the following
ascending order: LiOH, NaOH and KOH for the 1.0 and 0.1 *N* solns. and $Ca(OH)_2$,
$Sr(OH)_2$ and $Ba(OH)_2$ for the satd. solns. Tests made with C_6H_6 vapor showed that in
all cases, except where the samples were impregnated with 1.0 *N* NaOH, 1.0 and 0.1 *N*
KOH, adsorption was greater than in the non-treated C. With chloropicrin there was
an increase of adsorption with samples treated with 0.1 *N* NaOH and 1.0 *N* KOH, but
not with the sample treated with 1.0 *N* NaOH. With C_2H_2, NH_4OH treatment in-
creased adsorption, while in all other cases there was a decrease. Adsorption of iso-
AmOH from soln. was increased with LiOH-treated sample; in all other cases the
samples acted as hydrophilic adsorbents. Adsorption of PhOH from soln. was increased
by treatment of the C with 1.0 *N* NaOH and 0.1 *N* LiOH. In all other cases there was
either only a slight increase or a decrease in adsorption. **IV. Influence of impregna-**
tion with ammonium salts on activity of charcoal. *Ibid.* 335-40.—Satd. solns.
of NH_4 salts and a 25% soln. of NH_4OH were used in treating samples of C in the same
manner as above, except that impregnation lasted for 4 months. NH_4 salts, contg. a
non-volatile anion, like $(NH_4)_2HPO_4$ and $(NH_4)_2MoO_4$, increased the ash content of the
C. For adsorption of C_6H_6 vapor and C_2H_2, impregnation of samples with NH_4 salts
either had no effect or lowered the adsorptive activity (particularly in the case of NH_4-
CNS). Adsorption of 0.1 *N* PhOH from soln. was decreased except in the case of
NH_4NO_3 impregnation, while in the case of 0.1 *N* iso-AmOH adsorption, some treated
samples were hydrophobic and some hydrophilic. S. L. Madorsky

ASM-SLA METALLURGICAL LITERATURE CLASSIFICATION

NEKLYUDOVA, L.I.; KORNEYEVA, G.F.; PIKEL', N.V.; KUZNETSOVA, V.V.

Characteristics of influenza in Krasnodar in 1959. Vop.virus. 7 no.6:738 N-D '62. (MIRA 16:4)

1. Kubanskiy meditsinskiy institut i krayevaya sanitarno-epidemiologicheskaya stantsiya, Krasnodar.
(KRASNODAR—INFLUENZA)

PIKEL'N V

PIKEL', N.V.; CHERNYSHOVA, R.I.

Comparative epidemiological evaluation of scarlet fever vaccines.
Zhur.mikrobiol.epid.i immun. no.3:87 Mr '54. (MLRA 7:4)

1. Iz Krasnodarskogo instituta epidemiologii i mikrobiologii im. Savchenko. (Scarlet fever) (Vaccination)

PIKEL', V.O.

On anatomical and biological characteristics of Kuban bees; prelininary report
Rostov na Donu, Severo-Kavkazskoe Kraevoe Zemel'noe Upr. 1926 21 p.

1. Bees

SEDLAR, Danuska; PIKELJ, F.

Our experience with oral penicillin in the treatment of scarlet fever. Zdrav. vestn. 33 no.10:330-337 '64

1. Infekcijska klinika medicinske fakultete v Ljubljani (Predstojnik: prof. dr. M. Bedjanic).

ANDERS, V.R.; NESTEROV, B.A.; PIKEL'NER, G.A.; VARFOLOMEYEVA, Ye.M.; KARPOMOSOVA, R.M.

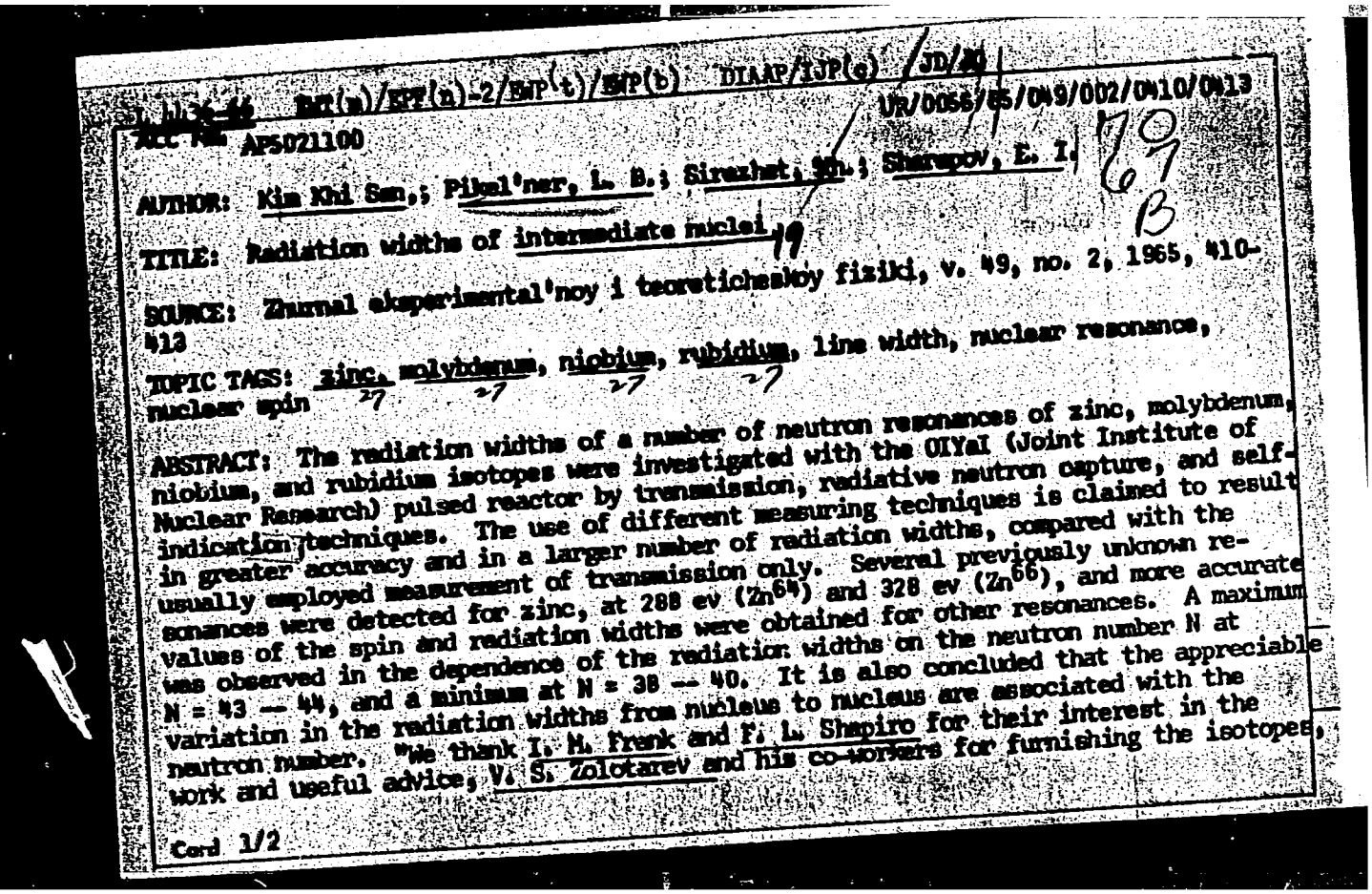
Apparatus for continuous determination of the salt content of desalted petroleum. Khim. i tekh.topl. i masel 4 no.3:21-22 Mr '59. (MIRA 12:4)

1. Spetsial'noye konstruktorskoye byuro po avtomatizatsii neftepererabotki i neftekhimicheskikh proizvodstv i Ufimskiy neftepererabatyvayushchiy zavod.
(Petroleum--Analysis)

KIM KHI SAN; FIKEL'NER, L.B.; SHRAZHET, Kh.; SHARAKOV, B.A.

Radiation widths of intermediate nuclei. Zhur. eksp. i teor. fiz. 49 no.2:410-413 Ag '65. (MIRA 18:9)

1. Ob"yedinennyy institut yadernykh issledovaniy.



EWT(m)/EPF(n)-2/EWP(t)/EWP(b) DIAAP/AJP(c) JD/JG
ACC NR: AP5021100 UR/0056/65/049/002/0410/0413

AUTHOR: Kim Khi San,; Pikel'ner, L. B.; Sirazhat, Sh.; Sharapov, E. I.

TITLE: Radiation widths of intermediate nuclei

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 2, 1965, 410-413

TOPIC TAGS: zinc, molybdenum, niobium, rubidium, line width, nuclear resonance, nuclear spin

ABSTRACT: The radiation widths of a number of neutron resonances of zinc, molybdenum, niobium, and rubidium isotopes were investigated with the OIYaI (Joint Institute of Nuclear Research) pulsed reactor by transmission, radiative neutron capture, and self-indication techniques. The use of different measuring techniques is claimed to result in greater accuracy and in a larger number of radiation widths, compared with the usually employed measurement of transmission only. Several previously unknown resonances were detected for zinc, at 288 ev (Zn^{64}) and 328 ev (Zn^{66}), and more accurate values of the spin and radiation widths were obtained for other resonances. A maximum was observed in the dependence of the radiation widths on the neutron number N at N = 43 — 44, and a minimum at N = 38 — 40. It is also concluded that the appreciable variation in the radiation widths from nucleus to nucleus are associated with the neutron number. "We thank I. M. Frank and F. L. Shapiro for their interest in the work and useful advice; V. S. Zolotarev and his co-workers for furnishing the isotopes,

Card 1/2

L 4436-66
ACC NR: AP5021100 3

and K. P. Lomov and I. I. Shelontsev for help with the measurement and computer calculations." Orig. art. has: 1 figure and 1 table.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 03Mar65 ENCL: 00 SUB CODE: NP

NR REF SOV: 005 OTHER: 005

Card 2/2

ZELIGER, D.; ILIYESKU, N.; KIM KHI SAN; LONGO, D.; PIKEL'NER, L.B., SHARAPOV, E.I.

Neutron resonances in bromine. Zhur. eksp. i teor. fiz. 45 no.5: 1294-1303 N '63. (MIRA 17:1)

1. Ob"yedinennyy institut yadernykh issledovaniy.

ACCESSION NR: AP4009090 S/0056/63/045/006/1743/1753

AUTHORS: Wang, Nai-yen; Vizi, I.; Yefimov, V. N.; Karzhavina, E. N.; Kim, Khi San; Popov, A. B.; Pikel'ner, L. B.; Pshitula, M. I.; Stadnikov, T.; Ch'eng, Ling-yen; Sharapov, E. I.; Shelontsev, I. I.; Shirikova, N. Yu.; Yazvitskiy, Yu. S.

TITLE: Investigation of the neutron resonances of Rh-103

SOURCE: Zhurnal eksper. i teoret. fiziki, v. 45, no. 6, 1963, 1743-1753

TOPIC TAGS: rhenium 103, neutron resonance, slow neutron spectrometry, p neutrons, s neutrons, force functions, Porter Thomas law, transmission measurement, scattering measurement, capture measurement

ABSTRACT: This is a report of the first results obtained with the slow neutron spectrometer developed at the Ob'yedinenny*y institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)

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ACCESSION NR: AP4009090

(described by Blokhin et al, in Atomnaya energiya, v. 10, 437, 1961) for a systematic investigation of neutron resonances and for the accumulation of a complete set of parameters for each neutron resonance study. The development was stimulated by the fact that as a rule the number of resonances known for each individual element is statistically limited, and the acquisition of new data on the resonances and their spins is of timely interest. Transmission, scattering and capture measurements were made with this spectrometer for several samples of Rh^{103}, which in addition to being a convenient element for such investigations also lies in the region where resonances induced by p-neutrons might be discovered. The measurements were made at resolutions of 0.04, 0.08, and 0.05 μsec/m, and the parameters of 17 resonances and the spins of 8 levels were determined. The observed deviation from the Porter-Thomas law with a single degree of freedom is attributed to the fact that some 4 or 5 resonances are due to neutrons with unity orbital angular momenta. Force functions for neutrons with zero and unity momenta were esti-

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ACCESSION NR: AP4009090

mated under these assumptions at $S_0 = (0.46 \pm 0.18) \times 10^{-4}$ and $S_1 =$ $= (1.8 \pm 1.4) \times 10^{-4}$. "In conclusion, we thank I. M. Frank and F. L. Shapiro for interest in the work and for useful discussions." Orig. art. has: 7 figures, 9 formulas, and 2 tables.

ASSOCIATION: Ob"yedinenny*y institut yaderny*kh issledovaniy (Joint Institute of Nuclear Research)

SUBMITTED: 01Jun63	DATE ACQ: 02Feb64	ENCL: 01
SUB CODE: PH	NO REF SOV: 007	OTHER: 006

Card 3/4

ACCESSION NR: AP4042367 S/0056/64/047/001/0043/0051

AUTHORS: Wang, Nai-yen; Iliyesku, N.; Karzhavina, E. N.; Kim, Khi San, Popov, A. B.; Pikel'ner, L. B. Stadnikov, T.; Sharapov, E. I.; Yazvitskiy, Yu. S.

TITLE: Neutron resonances in praseodymium and terbium

SOURCE: Zh. eksper. i teor. fiz., v. 47, no. 1, 1964, 43-51

TOPIC TAGS: praseodymium, terbium, resonance scattering, neutron scattering, neutron spectrum, Fermi statistical theory

ABSTRACT: This is a continuation of earlier neutron-resonance measurements made on radium and bromine (ZhETF v. 45, 1743, 1963 and v. 45, 1294, 1963). The Tb and Pr resonance parameters and the spins of many levels were determined by measuring the transmission, the radiative capture, and the neutron scattering. Transmission was measured with the apparatus of I. Vizi et al. (Nuclear electronics,

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ACCESSION NR: AP4042367

v. 1, Vienna, 1962, page 27). Radiative capture was studied by means of the detector described by L. B. Pikel'ner et al. (PTE, no. 2, 51, 1963). A total of 22 levels at energies up to 100 eV and 14 levels at energies up to 1000 eV (of which four were observed for the first time) were analyzed for Tb and Pr, respectively. The new measurements were obtained using a neutron time-of-flight spectrometer and the OIYaI pulsed fast reactor of the Joint Institute for Nuclear Research. The average value of the radiation widths of the Tb and Pr levels were found to be 86 MeV for both elements. The neutron width distribution for all substances do not agree very well with the Porter-Thomas distribution. Measurements with better resolution and in a much wider energy range are necessary to refine the neutron width distribution. "We thank F. L. Shapiro for interest and valuable discussions, and I. I. Shelontsev and N. Yu. Shirikova for the electronic computer calculations." Orig. art. has: 2 figures and 2 tables.

Joint Inst Nuclear Research

2/5

PIKELNER, L. B., POPOV, A. B., SHARAPOV, E. I., YAZVITSKIY, Y. S., VIZI, I., ZHUKOV, G. P., ZABIYAKIN, G. I., KARZHAVINA Ye. N.,

"Liquid Scintillation Detectors for Registering Neutrons."

Joint Institute for Nuclear Research, Dubna, USSR.

report submitted for the IAEA conf. on Nuclear Electronics, Belgrade, Yugoslavia 15-20 May 1961

L 11383-63 EWT(m)/BDS AFFTC/ASD

S/120/63/000/002/010/041

AUTHOR: Pikal'ner, L. B., Pshitula, M. I., Kim Khi San, Ch'eng Ling-Yen, and Sharapov, E. I.

TITLE: A liquid (n, γ) scintillation detector

PERIODICAL: Pribory i tekhnika eksperimenta, March-April 1963, v. 8, no. 2, 48-50

TEXT: The article describes a 400 liter liquid scintillation detector for investigation of the cross sections of (n, γ) reactions in transit-time experiments. The instrument's low noise level (less than 2 percent) justifies its low efficiency (30 percent for a 0.5 Mev threshold in the double-coincidence mode). This low noise level is considerably below that of conventional instruments. There are 3 figures.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Research)

SUBMITTED: April 20, 1962

Card 1/1

L 11382-63 EWT(m)/BDS AFFTC/ASD

S/120/63/000/002/011/041

AUTHOR: Pikel'ner, L. B., Pshitula, M. I., Kim Khi San, Ch'eng Ling-Yen, and Sharapov, E. I.

TITLE: A scintillation detector for registration of scattered neutrons

PERIODICAL: Pribory i tekhnika eksperimenta, March-April 1963, v. 8, no. 2, 51-54

TEXT: The efficiency of the detector relative to neutrons depends slightly on energy and is ~ 10 percent in the hundred electron volt region, while the efficiency relative to γ-rays is three orders of magnitude less in this case. The instrument has a field of view of about 3.6 steradians. The lifetime of neutrons in the detector is ~ 15 μ sec. Part of the spectrum for resonance scattering of neutrons of Rh103 is given.

ASSOCIATION: Ob'yedinennyy institut yadernykh issledovaniy (Joint Institute for Nuclear Research)

SUBMITTED: June 20, 1962

Card 1/1

VAN NAY-YAN' [Wang Nai-yen]; VIZI, I.; YEFIMOV, V.N.; KARZHAVINA, E.N.; KIM KHI SAN; POPOV, A.B.; PIKEL'NER, L.B.; PSHITULA, M.I.; STADNIKOV, T.; CHEN LIN-YAN'; CHARAPOV, E.I.; SHELONTSEV, I.I.; SHIRIKOVA, N.Yu.; YAZVITSKIY, Yu.S.

Neutron resonances in Rh^{103}. Zhur. eksp. i teor. fiz. 45 no.6:1743-1753 D '63. (MIRA 17:2)

1. Ob"yedinennyy institut yadernykh issledovaniy.

VAN NAY-YAN' [Wang Nai-yen]; ILIYESKU, N.; KARZHAVINA, E.N.; KIM KHI SAN; POPOV, A.B.; PIKEL'NER, L.B.; STADNIKOV, T.; SHARAPOV, E.I.; YAZVITSKIY, Yu.S.

Neutron resonances in praseodymium and therbium. Zhur. eksp. i teor. fiz. 47 no.1:43-51 Jl '64. (MIRA 17:9)

1. Ob"yedinennyy institut yadernykh issledovaniy.

PIKEL'NER, ..B.

Interaction between neutrons and nuclei in the energy range
ev. 100 Kev. Atom. energ. 17 no.5:413-414 N '64.
(MIRA

L 34708-65 EWA(h)/EWT(m) DM

ACCESSION NR: AP4049544 S/0069/64/017/005/0413/0414

AUTHOR: Pikel'ner, L. B. 84 9 B

TITLE: Interaction of neutrons with nuclei in the 1 eV--100 keV range

SOURCE: Atomnaya energiya, v. 17, no. 5, 1964, 413-414

TOPIC TAGS: neutron nucleus interaction, neutron cross section, neutron capture, radiative capture, nuclear fission, gamma ray spectrum

ABSTRACT: A conference on the interaction between neutrons and nuclei, in the energy region 1 eV--100 keV, was held in June 1964 at the Joint Institute of Nuclear Research (Dubna). One hundred fifty persons from the countries participating in the Joint Institute attended and delivered 40 papers on the properties of nuclear levels, total neutron cross sections, radiative capture of neutrons, nuclear

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fission, γ-ray spectra following capture of resonant neutrons, polarized resonant neutrons, and experimental procedures. A review paper by Ya. A. Smorodinskiy (OIYaI) was devoted to the statistics of nuclear levels, developed in accordance with Dyson's theory. Another review paper by I. Ya. Barit, G. M. Vagradov, V. A. Sergeyev, and A. V. Stepanov, "Three-Quasi-Particle Excitations and Intermediate Structure of Energy Dependence of Nuclear Reactions," was devoted to a model for compound-nucleus formation with excitation of a small number of nucleons in the nucleus. N. A. Kasy*mzhanov and B. N. Zakhar'yev (OIYaI) considered in a theoretical paper the capture of slow p-neutrons by nuclei. The question of obtaining the most probable values of the strength functions from experimental data, with allowance for the laws of distribution of the reduced neutron widths and distances between levels, was discussed by G. V. Muradyan and Yu. V. Adamchuk (IAE). An original method for distinguishing between s- and p-wave resonances was proposed by G. V. Muradyan (IAE). V. Rudol'f, Kh. Gersh, and K. Aleksander

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(TsIYaI, East Germany) compared the intensities of excitation of the levels of K^{40}, V^{52}, Co^{60} upon capture of thermal neutrons and in the (d, p) reaction. S. I. Sukhoruchkin considered some problems connected with the energy structure of nuclei. Yu. V. Adamchuk, S. S. Moskalev, and G. V. Muradyan (IAE) reported an experimental investigation of strength functions of nuclei with atomic weights A ~ 100. V. I. Vertebny*y, M. F. Vlasov, M. V. Pasechnik et al. reported the results of measurements of total neutron cross sections of erbium and rhenium isotopes, using the mechanical selector of the Institut fiziki AN UkrSSR. The total cross section of the isotopes of iron, nickel, and calcium were investigated over a wide range of neutron energies (from 0.03 eV to 70 keV) by Ye. Ya. Dol'nitsy*n, M. V. Panarin, and A. I. Stupak (FEI). Polarized neutrons were the subject of a review paper by Yu. V. Taran and an experimental paper by P. Dragichesku, V. I. Lushchikov, V. G. Nikolenko, Yu. V. Taran and F. L. Shapiro (OIYaI). Yu. A. Kazanskiy and A. V. Maly*shev (FEI) examined the contribution of direct neu-

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tron radiative cross section to the thermal cross section. The calculation of the average radiation widths was treated in a paper by A. V. Maly*shev and S. M. Zakharova (FEI). The results of an investigation of neutron resonances of rubidium isotopes were reported by E. I. Sharapov, L. B. Pikel'ner, N. Iliyesku, Kim Khi San, and Kh. Sirazheta (OIYaI). The connection between the scattering length and the neutron radiative cross section was indicated in a paper by Yu. I. Fenin and F. L. Shapiro (OIYaI), and in an experimental paper by S. A. Romanov and F. L. Shapiro this relation was used to obtain the radiative widths of Se^{45} and Cl^{35}. Great interest was evoked by a review paper of Yu. P. Popov and Yu. I. Fenin (OIYaI), devoted to the interaction between p-neutrons and nuclei and to an analysis of averaged cross sections. Experimental data on the averaged total cross sections for some heavy nuclei at energies up to 10 keV were reported by M. N. Nikolayev and U. M. Makhanov (FEI). Results of measurements of averaged cross sections for radiative capture were presented also in papers by S. P. Kap-

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chigashev and Yu. P. Popov and by V. A. Konks and Yu. I. Fenin. A review paper by N. S. Robotnov and G. N. Smirenkin (FEI) "Nuclear Fission by Low Energy Neutrons" was devoted to questions of fission symmetry, ternary fission, averaged characteristics of the capture to fission ratio, and other problems connected with the interaction of resonant neutrons with fissioning nuclei. Experimental investigations of neutron resonances of U^{235} were reported in a paper by Wang Shi-ti, Wang Yung-ch'ang, Ye. Dermendzhiyev, and Yu. V. Ryabov (OIYaI). The parameters of the levels of Pu^{239} were the subject of a paper by K. G. Ignat'yev and I. V. Kirpichnikov (ITEF). The γ-ray spectra in the capture of neutrons by resonances were studied by F. N. Belyayev and K. G. Ignat'yev (ITEF) and by V. S. Al'nikov, D. L. Broder, M. V. Panarin, and L. P. Kham'yanov (FEI). Methodological papers delivered to the conference dealt principally with neutron time of flight spectrometers. Papers on this subject were delivered by Ye. Ya. Doil'nitsyn (FEI), I. Skrzhivanek, F. Bochvarzh, V. Plashila (IYaI, Czechoslovakia), Sh. Dobresku, G. Kritsya,

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M. Konstantinesku, V. Mateychuk, T. Stadnikova (IAF, Rumania), and V. F. Gerasimov, V. S. Zenkevich, and V. V. Safronov (IAE). Considerable interest was attracted by the paper of Wang Shi-ti and Yu. V. Ryabov (OIYaI) on a liquid scintillation detector for fission registration, and a paper by D. L. Broder, M. V. Panarin, A. N. Utyuzhnikov, and L. P. Kham'yanov (FEI) on a total-absorption anti-coincidence scintillation γ spectrometer.

ASSOCIATION: None

SUBMITTED: 00

ENCL: 00

SUB CODE: NP

NR REF SOV: 000

OTHER: 000

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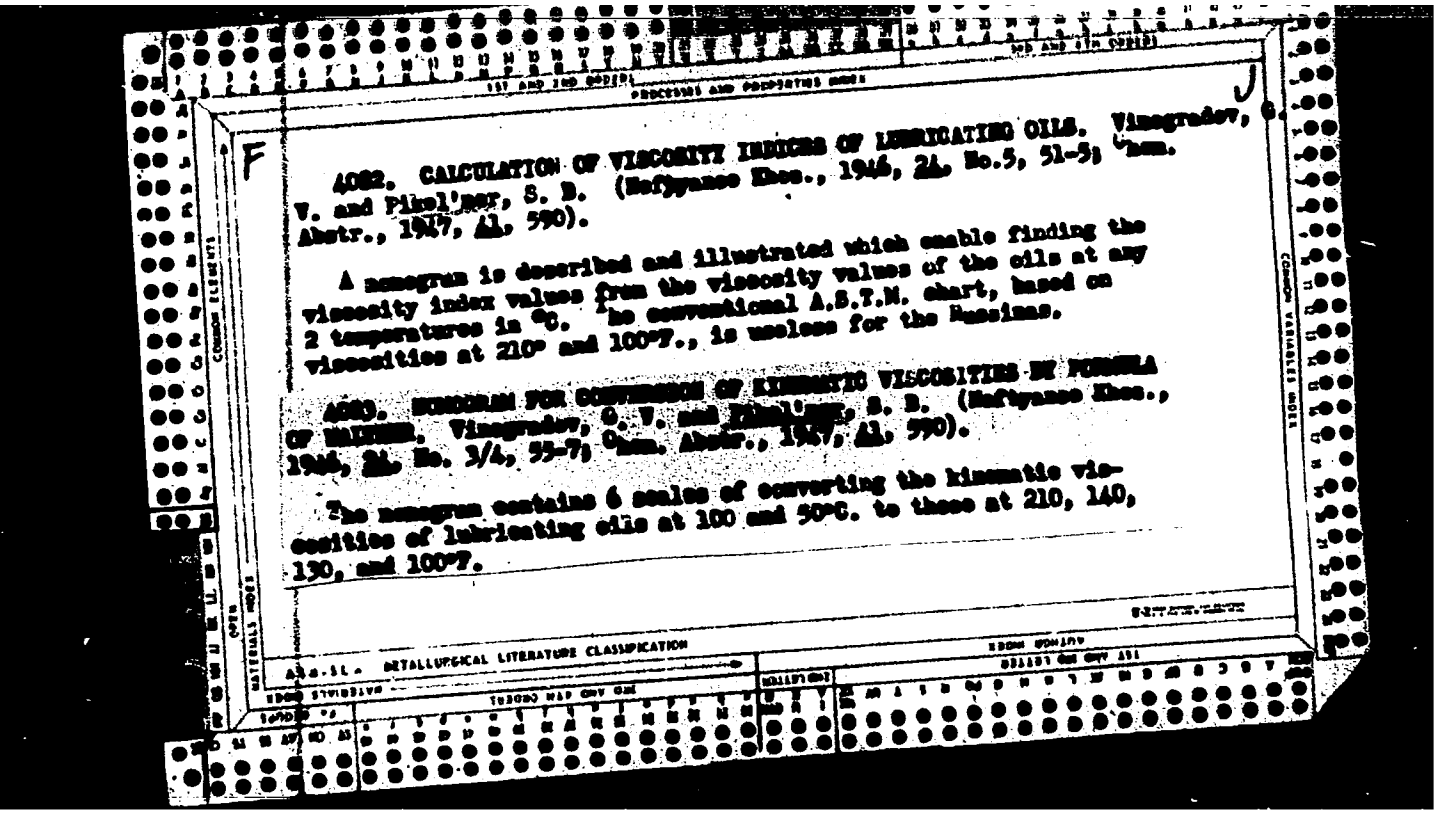

4082. CALCULATION OF VISCOSITY INDICES OF LUBRICATING OILS. Vinogradov, G. V. and Pikal'nor, S. B. (Neftyanoe Khoz., 1946, 24, No.5, 51-5; Chem. Abstr., 1947, 41, 990).

A nomogram is described and illustrated which enable finding the viscosity index values from the viscosity values of the oils at any 2 temperatures in °C. The conventional A.S.T.M. chart, based on viscosities at 210° and 100°F., is useless for the Russians.

4083. NOMOGRAM FOR CONVERSION OF KINEMATIC VISCOSITIES BY FORMULA OF WALTHER. Vinogradov, G. V. and Pikal'nor, S. B. (Neftyanoe Khoz., 1946, 24, No. 3/4, 55-7; Chem. Abstr., 1947, 41, 990).

The nomogram contains 6 scales of converting the kinematic viscosities of lubricating oils at 100 and 50°C. to those at 210, 140, 130, and 100°F.

PIKEL'NER, S.B.

Pikel'ner, S.B. "Resistance to motion of atoms in astral atmospheres in reference to a Wolf-Rayet star and to the sun," Izvestiya Krymsk. astrofiz. observatorii, Vol. III, 1948, p. 51-63 - Bibliog: 13 items

SO: U-2888, Letopis Zhurnal'nykh Statey, No. 1, 1949

SHKEL'NER, S. B.

PA 18/49T96

USSR/Physics Sep/Oct 48
Astronomy
Comets

"The Charge of the Tail of a Comet and Its Effect on the Rate of Enlargement of the Tail," S. B. Shkel'ner, O. N. Metropol'skaya, Crimean Astrophys Obs, 6½ pp Mekhpolitskaya

"Astron Zhur" No 5

Examines phenomenon of positive charge in the tail of a comet caused by electron dispersion due to heat movement. Dispersion becomes practically unimportant at a certain value of the charge. Faster electrons leave the tail

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USSR/Physics (Contd) Sep/Oct 48

at a certain time thus increasing positive charge in the tail. Charge increases flow of electrons from space into tail of comet. Charge, determined by extent to which this influx is compensated by electrons leaving the tail, acts on ions of the tail, causing them to extend from the axis. An appreciable part (up to 0.1) of the tail's axis is due to this cause. A mechanical theory of the shape of comets' tails should consider this effect in the second approximation.

18/49T96

PIKEL'NER, S. B.

PA 160T2

USSR/Astronomy - Corona, Solar
Stellar Phenomena

11 May 50

"Dissipation of the Corona and Its Significance," S. B. Pikel'ner, Crimean Astrophys Obs, Acad Sci USSR, 4 pp

"Dok Ak Nauk SSSR" Vol LXXII, No 2

Correction of implied assumptions (volatility and Maxwellsian distribution) made in previous dynamical studies on stellar solar atmospheres (corona); assumptions are mutually contradictory (no collision of gas particles in corona assumed by the first). Submitted 11 Mar 50 by Acad G. A. Shayn.

160T2

PIKEL'NER, S. B.

USSR (600)

Sun Spots

Induction phenomena in the solar atmosphere. Izv. Krym. astrofiz. obs. no. 7, 1951.

Monthly List of Russian Accessions, Library of Congress. November 1952. UNCLASSIFIED.

PIKEL'NER, S.B.

"Cosmical electrodynamics" [in English]. H.Alfven. Reviewed by S.B.Pikel'ner. Vop.kosm.1:259-262 '52. (MLRA 7:2)
(Electromagnetism) (Astrophysics) (Alfven, Hannes, 1908-)

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"Dissipation of the solar corona and its significance" (author s abstract). Vop.kosm.1:278 52.

(MLRA 7:2)

(Sun--Corona)

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Nebulae

Crab-like nebula. Priroda 41 No. 8, 1952.

9. Monthly List of Russian Accessions, Library of Congress, November 1952 1952, Uncl.

1. PIKEL'NER, S. B.

2. USSR (600)

4. Sun

7. Chromosphere and chromospheric explosions on the Sun. Priroda 41 no. 12, 19..

9. Monthly List of Russian Accessions, Library of Congress, March 1953, Uncl.

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[Problems of cosmical aerodynamics; collection of reports] Problemy kosmicheskoi aerodinamiki; sbornik dokladov. Perevod s angliiskogo V.S.Berdichevskoi, pod red. S.B.Pikel'nera. Moskva, Izd-vo inostrannoi lit-ry, 1953. 272 p. (MLRA 6:10)

(Astrophysics) (Aerodynamics)

PIKEL'NER, S.B.

Interstellar gas and magnetic fields. Izv.Krym.astrofiz.obser. 10:74-96 '53. (MLRA 7:5)

(Gases, Interstellar) (Magnetism)

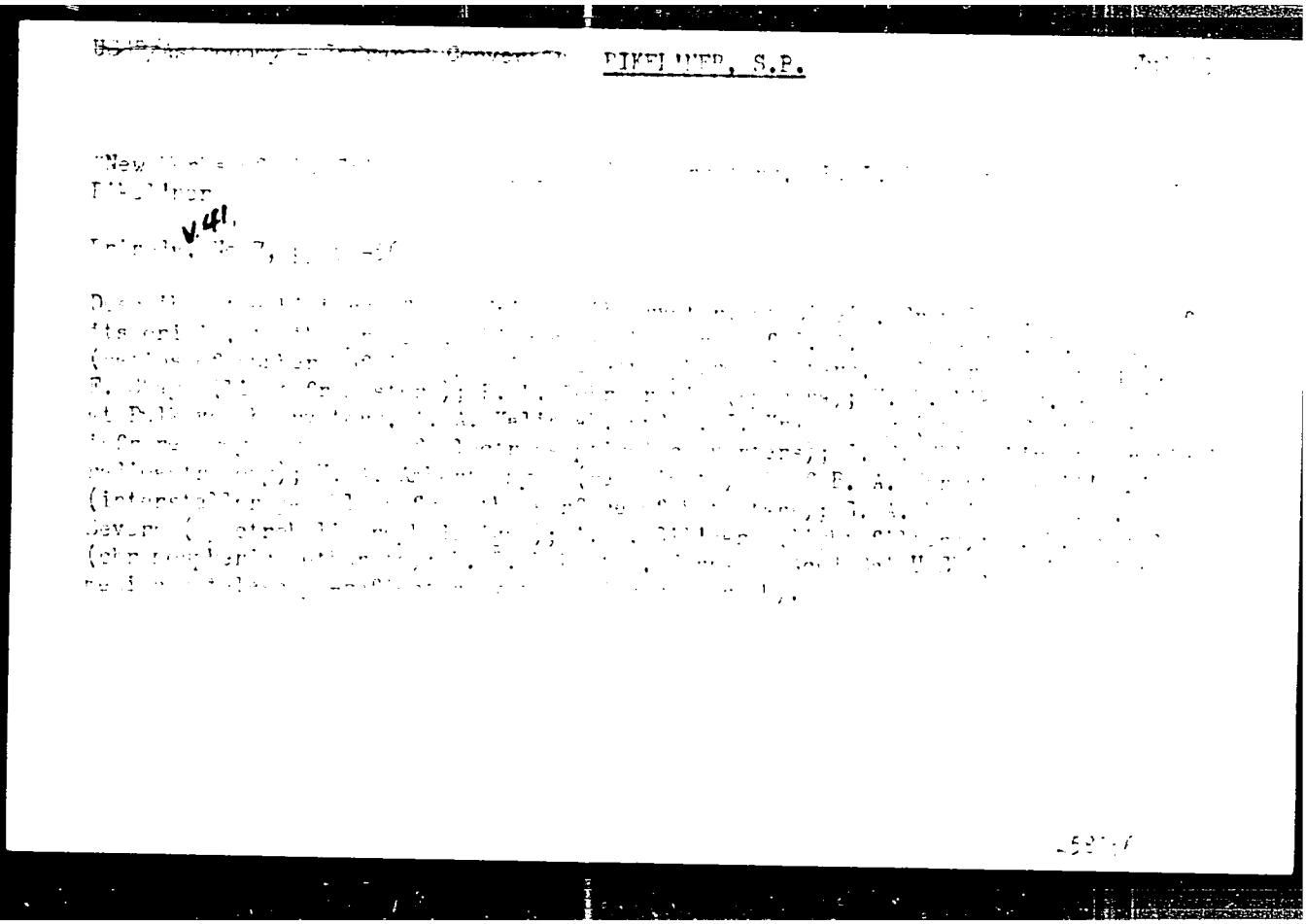
PIKEL'NER, S.B.

SHAYN, G.A.; PIKEL'NER, S.B.

Character of turbulence in an interstellar medium. Izv.Krym.astrofiz. obser. 10:97-103 '53. (MLRA 7:5)
(Gases, Interstellar)

PIKEL'NER, S.B.

Ionization of helium in nebulae and temperatures of O stars.
Izv.Krym.astrofiz.obser. 10:183-199 '53. (MLRA 7:5)
(Helium) (Nebulae) (Stars--Temperature)



PIKE MEP, S.P.

Pikel'ner S.B.

New

ASTROPHYSICS

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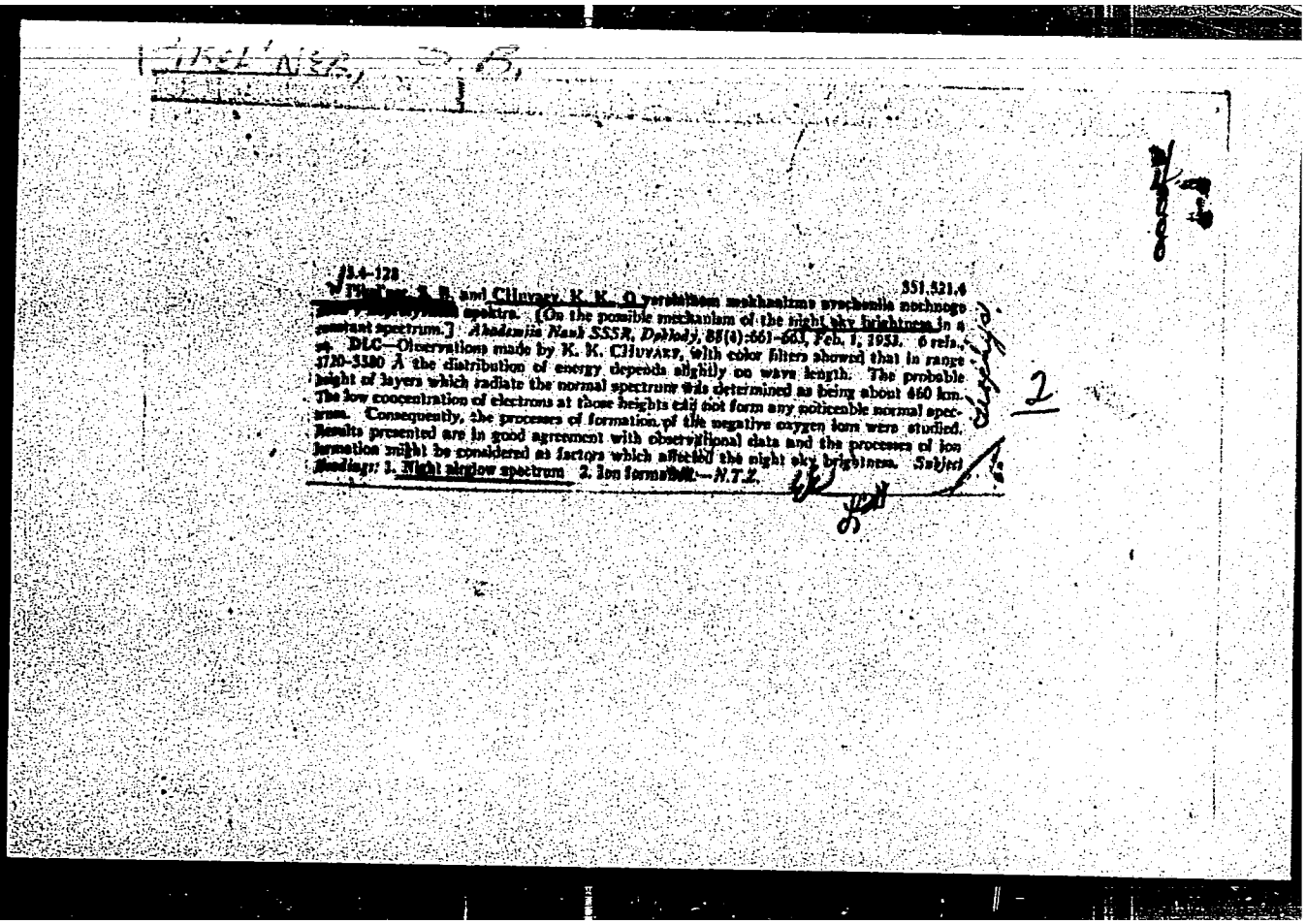
KINEMATIC PROPERTIES OF THE INTERSTELLAR GAS IN CONNECTION WITH COSMIC RAY ISOTROPY. S. B. Pikel'ner. Translated by E. R. Hope from Doklady Akad. Nauk S.S.S.R. 88, 229-32(1953). 7p. (AEC-tr-1761)

The lack of a discontinuity in the energy spectrum of cosmic rays up to 10^{17} ev is evidence of a magnetic field in interstellar space which is induced by gas clouds about 100 parsecs thick. It is pointed out that such a field must have an intensity greater than 3×10^{-6} oersteds over the entire volume of the galaxy in order to confine the radiation throughout the whole galaxy. These factors, considered with present knowledge on the structure of interstellar gas, lead to the conclusion that the rarefied component must extend to great heights, whereas the dense clouds move in the vicinity of the galactic plane. Such a conclusion indicates that the total mass of interstellar gas is several times greater than previously assumed. By considering the ionization of such a gas, together with probable abundances of Ca and Na atoms, it is shown that the interstellar gas may be detected spectroscopically and may explain the previously reported broadening of super-giant spectra by absorption with the interstellar gas. Two examples of this effect are cited as evidence for the nonstellar origin of this effect. (This paper has been previously title listed in Nuclear Science Abstracts as NSA 7-3181.) (K.B.)



551.521.6

[illegible] and Chuvaev, K. K. O vozmozhnom mekhanizme svecheniia nochnogo [illegible] spektra. (On the possible mechanism of the night sky brightness in a continuous spectrum.) *Akademiia Nauk SSSR, Doklady*, 88(4):661-663, Feb. 1, 1953. 6 refs.

DLC—Observations made by K. K. Chuvaev, with color filters showed that in range 3720-5380 Å the distribution of energy depends slightly on wave length. The probable height of layers which radiate the normal spectrum was determined as being about 460 km. The low concentration of electrons at those heights can not form any noticeable normal spectrum. Consequently, the processes of formation of the negative oxygen ion were studied. Results presented are in good agreement with observational data and the processes of ion formation might be considered as factors which affected the night sky brightness. Subject Headings: 1. Night airglow spectrum 2. Ion formation.—*N.T.Z.*

PIKEL'NER, S. B. and SHAYN, G. A.

"Investigation of Turbulence in the Orion Nebula According to Fluctuations in Brightness," Dokl. AN SSSR, 90, No.5, pp 741-744, 1953

The nature of the internal motions in nebulae must be known in order to solve problems of the evolution of gaseous nebulae, and to investigate the possibility of their gravitational compression into stars and the possibility of the capture of nebular matter by stars. This is well illustrated in the case of Orion. Further states that fluctuations in brightness may give clues to the nonhomogeneity of interstellar absorption and hence to the desired information on interstellar turbulence.

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